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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

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CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1026 OG 276
Reissue Applications Filed	1026 OG 276
Requests for Reexaminations Filed	1026 OG 276
Extension of Time for Filing Notices of Opposition to Marks Published	1026 OG 276
International Nonproprietary Names for Pharmaceutical Substances	1026 OG 276
Errata	1026 OG 277
Patent Certificates of Correction	1026 OG 278
Disclaimers	1026 OG 278
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1026 OG 279
Condition of Patent Applications	1026 OG 280
Reexaminations	1026 OG 281
Reissue Patents Granted (31,120)	347
Plant Patents Granted (4,972)	349
Patents Granted	
General and Mechanical (4,367,561)	351
Chemical (4,368,053)	519
Electrical (4,368,348)	603
Design Patents Granted (267,518)	671
Index of Patentees	PI 1
Indices of Reissue, Designs and Plant Patentees	PI 38
Classification of	
Patents (Including Reissues)	PI 41
Designs and Plants	PI 43
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 44
Designs and Plants	PI 45
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the Official Gazette at 1017 O.G. 10 on Apr. 13, 1982. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the domestic PCT fees have been increased as of Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. Also note that the international PCT fees have changed as of Jan. 1, 1983 and the Search Fee for the European Patent Office as Searching Authority will change as of Jan. 22, 1983. The notice regarding the change in international fees and the Search Fee for the European Patent Office appeared at 1025 O.G. 27, on 28 Dec. 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• Until Jan. 22, 1983, All cases	710.00
• After Jan. 22, 1983, All cases	670.00
International Fees	
Basic Fees (first 30 pages)	265.00
Basic Supplemental Fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	65.00

GERALD J. MOSSINGHOFF,
Dec. 3, 1982. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,715,334, Re. S.N. 372,833, Filed Apr. 28, 1982, Cl. 528/15, PLATINUM-VINYL SILOXANES, Bruce D. Karstedt, Owner of Record: *General Electric Co., Waterford, N.Y.,* Attorney or Agent: Edward A. Hedman, et al., Ex. Gp.: 142

3,761,950, Re. S.N. 442,128, Filed Nov. 15, 1982, Cl. 346/68, X-Y PLOTTER, John O. Yeiser, Owner of Record: *Bausch & Lomb, Inc., Rochester, N.Y.,* Attorney or Agent: W. F. Hyer, Ex. Gp.: 211

3,937,283, Re. S.N. 420,987, Filed Sept. 21, 1982, Cl. 166/307, FORMATION FRACTURING WITH STABLE FOAM, Roland E. Blauer, et al., Owner of Record: *Scientific Software Corp., Denver, Colo.,* Attorney or Agent: Richard G. Waterman, Ex. Gp.: 356

4,223,966, Re. S.N. 421,440, Filed Sept. 22, 1982, Cl. 312/140, GLASS DISPLAY CASE, Albert C. Winters, Owner of Record: *Manhattan Store Interiors, Inc., Brooklyn, N.Y.,* Attorney or Agent: None, Ex. Gp.: 355

4,232,842, Re. S.N. 439,592, Filed Nov. 5, 1982, Cl. 242/212, FISHING REEL HAVING SUPPORT FOR A DEFLECTED SPOOL SHAFT, Hideo Noda, Owner of Record: *Shimano Industrial Co. Ltd., Osaka, Japan,* Attorney or Agent: Ellsworth H. Mosher, et al., Ex. Gp.: 245

4,245,521, Re. S.N. 425,329, Filed Sept. 28, 1982, Cl. 74/476, MANUAL TRANSMISSION SHIFTER FOR OPERATING A TRANSMISSION WITH ELONGATED ACTUATORS SUCH AS FLEXIBLE CABLES, Charles Osborn, Owner of Record: *JSJ Corp., Grand Haven, Mich.,* Attorney or Agent: Peter P. Price, et al., Ex. Gp.: 352

4,274,519, Re. S.N. 439,937, Filed Nov. 8, 1982, Cl. 192/3.28, LOCK-UP CLUTCH FOR A HYDRAUTIC UNIT, Shuzo Moroto, et al., Owner of Record: *Aisin-Warner K. K., Aichi, Japan,* Attorney or Agent: Thomas F. Moran, et al., Ex. Gp.: 352

4,296,116, Re. S.N. 438,827, Filed Nov. 3, 1982, Cl. 424/272, FUNGICIDAL AGENTS, PROCESSES FOR THEIR PREPARATION AND THEIR USE FOR COMBATING FUNGI, Helmut Kaspers, et al., Owner of Record: *Bayer Aktiengesellschaft, Leverkusen, Germany,* Attorney or Agent: Arnold Sprung, et al., Ex. Gp.: 125

4,319,214, Re. S.N. 397,673, Filed July 12, 1982, Cl. 337/343, CREEPLESS, SNAP ACTION THERMOSTAT, Omar Givler, Owner of Record: *Portage Electric Products, Inc., North Canton, Ohio,* Attorney or Agent: Lloyd McAulay, et al., Ex. Gp.: 112

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

No Publications This Issue

Extension of Time for Filing Notices of Opposition to Marks Published in the Official Gazette Dated Dec. 7, 1982

Copies of the Official Gazette dated Dec. 7, 1982 were not mailed until Dec. 14, 1982. Therefore, for marks published in the Official Gazette dated Dec. 7, 1982, Notices of Opposition filed by Jan. 13, 1983 will be considered timely.

MARGARET LAURENCE,
Dec. 16, 1982. *Assistant Commissioner for Trademarks.*

International Nonproprietary Names for Pharmaceutical Substances

The World Health Organization has published a list of proposed drug names which are being considered for International Nonproprietary Names. The Organization allows interested persons an opportunity to make comments or objections before International Nonproprietary Names are adopted.

A copy of the list of proposed names, which was published in the Oct. 1982, *WHO Chronicle*, may be obtained by writing or calling the Office of the Director of the Trademark Examining Operation, Box 5, Patent and Trademark Office, Washington, D.C. 20231, telephone (703) 557–3268. Comments or objections should be sent directly to the Pharmaceuticals Unit, World Health Organization, Ave. Appia, 1211 Geneva 27, Switzerland, not later than Feb. 28, 1983. Comments or objections should refer to the drug in question, cite the proposed name, and state clearly and in appropriate detail the comments or objections (legal, technical, scientific, or other). The individual or agency making the comments or objections should be identified.

MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

Dec. 13, 1982.

Errata

It is requested that the following errata be published in the Official Gazette at your convenience:

In the Official Gazette of Apr. 8, 1975 under TRADEMARK REGISTRATIONS RENEWED, on page TM 138, "607,923. 'POWER CUSHION.' Int. Cl. 6 (U.S. Cl. 23). 6–28–55." should be deleted and "607,923. 'POWER CUSHION.' Int. Cl. 7 (U.S. Cl. 23). 6–28–55." should be inserted.

The following registration numbers, listed in the "Trademark Registrations Issued" section of the Official Gazettes of Oct. 26, 1982 and Nov. 16, 1982, were inadvertently issued:

TMOG Oct. 26, 1982	TMOG Nov. 16, 1982
1,214,232	1,216,774

Consequently, certificates of registration bearing the above-identified numbers were not issued on the dates indicated, and these registration numbers have been vacated.

HERBERT C. WAMSLEY,
Director, Trademark Examining Operation.

Dec. 6, 1982.

PATENT NOTICES

Certificates of Correction for the Week of Jan. 11, 1983

4,171,841	4,334,566	4,347,351	4,353,931
4,206,362	4,334,937	4,347,452	4,354,142
4,235,860	4,335,595	4,347,609	4,354,519
4,245,096	4,336,080	4,348,316	4,354,561
4,249,254	4,336,368	4,348,668	4,354,786
4,251,330	4,336,445	4,348,985	4,354,948
4,279,839	4,337,138	4,349,248	4,354,967
4,287,100	4,338,669	4,349,621	4,355,331
4,295,524	4,338,670	4,349,726	4,355,396
4,301,069	4,338,713	4,349,878	4,355,420
4,302,768	4,339,553	4,350,015	4,355,457
4,303,464	4,339,755	4,350,016	4,356,012
4,303,879	4,341,083	4,350,090	4,356,223
4,305,874	4,342,011	4,350,377	4,356,244
4,306,369	4,342,645	4,350,612	4,356,269
4,307,871	4,343,823	4,350,660	4,357,090
4,308,959	4,343,848	4,351,191	4,357,170
4,310,346	4,344,622	4,351,524	4,357,698
4,311,387	4,344,843	4,351,875	4,357,763
4,315,543	4,345,081	4,352,600	4,357,789
4,315,679	4,345,189	4,352,750	4,358,553
4,317,736	4,345,275	4,352,781	4,359,466
4,330,698	4,346,044	4,353,366	4,359,496
4,331,549	4,346,863	4,353,466	4,359,990
4,332,201	4,347,266	4,353,716	

1026 OG 278

Disclaimers

2,968,164.—*Alden W. Hanson,* Midland, Mich. METHOD OF GENERATING SNOW. Patent dated Jan. 17, 1961. Disclaimer filed May 19, 1982, by the inventor.

Hereby enters this disclaimer to claim 4 of said patent.

3,998,935.—*Ben E. Adams,* Hanford, Calif.; *John B. Sardisco,* Shreveport, La.; and *Erhart K. Drechsel,* Houston, Tex. MANUFACTURE OF POTASSIUM SULFATE. Patent dated Dec. 21, 1976. Disclaimer filed Nov. 24, 1982, by the assignee, *Pennzoil Co.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 5 and 6 of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, Ext. 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries, except the Cleveland Public Library, offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF November 27, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-19-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	7-20-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	8-28-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	12-18-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	10-06-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	12-17-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-16-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-24-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	2-02-81
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	12-15-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-26-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	3-02-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	2-09-80

Expiration of patents: The patents within the range of numbers indicated below expire during November 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... **Numbers 3,214,767 to 3,221,338, inclusive**

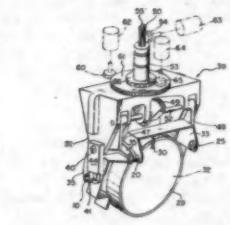
Plant Patents ..... **Numbers 2,566 to 2,576 inclusive**

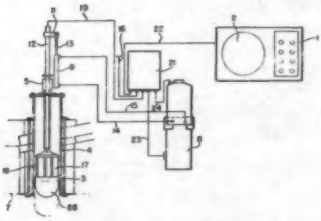
REEXAMINATIONS

January 11, 1983

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination

B1 3,553,638 (39th)
SONAR SCANNING MECHANISM
Kenneth L. Sublett, Seattle, Wash., assignor to Western Marine Electronics Company, Seattle, Wash.
Reexamination Request No. 90/000,025, Jul. 13, 1981.
Reexamination Certificate for Patent No. 3,553,638, issued Jan. 5, 1971, Ser. No. 841,188, Jan. 19, 1969.
U.S. Cl. 367/12 **Int. Cl.[3] G01S 7/52.**





AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 5–10 and 14 is confirmed.

Claims 11 and 13, having been finally determined to be unpatentable, are cancelled.

Claims 1–4 and 12 are determined to be patentable as amended:

1. A sonar system for installation in a marine vessel which comprises:

an acoustic transducer for generating a sonar scanning beam and for detecting sound waves reflected from objects;

an acoustic transducer for generating a sonar scanning beam and for detecting sound waves reflected from objects;

an acoustic transducer for generating a sonar scanning beam and for detecting sound waves reflected from objects;

support means:

pendulum means having a longitudinal axis;

suspension means for pendulously suspending said pendulum means from said support means for gravity-determined orientation of the pendulum means so that its longitudinal axis is normally a substantially vertical axis;

mounting means journaled to said [support] *pendulum* means and mounting said transducer to said [support] *pendulum* means such that said [support means and] transducer [are] *is* independently pivotable *relative to said pendulum means* about a transverse axis *spaced below said suspension means and perpendicular to said longitudinal axis;*

vertical scan drive means operably coupled to said transducer to rotate said transducer about [a] *said* transverse axis for vertical scanning without [affecting the independent pivotability of said transducer and support means] *moving the longitudinal axis of the pendulum from a substantially vertical position;* [and]

horizontal scan drive means operably [coupled to] *interconnected with* said transducer to rotate said transducer about [a vertical] *said longitudinal* axis [perpendicular to said transverse axis] for horizontal scanning without [affecting the independent pivotability of said transducer and support means] *moving the longitudinal axis of the pendulum from a substantially vertical position; and*

a watertight housing independent of operation of said horizontal scan drive means and enclosing said transducer, support means, pendulum means, and suspension means.

2. The system of claim 1 wherein said [horizontal] *vertical* scan drive means includes:

a pinion gear journaled for rotation in said support means;

a ring gear rigidly connected to said transducer and in mesh with said pinion gear for [effecting] *affecting* variations in the angle of said transducer and sonar scanning beam in response to rotation of said pinion gear; and

pinion drive means to rotate said pinion gear.

3. The system of claim 2 wherein said support means includes a frame, *and said pendulum means includes* a support arm pivotally connected at one end to said frame on an axis coincident with the axis of rotation of said pinion gear and pivotally connected at the other end to said transducer on an axis coincident with the axis of rotation of said ring gear, the teeth of the ring and pinion gears meshed to allow rotation of the pinion gear relative to the ring gear.

4. The system of claim 3, further including [a housing enclosing the transducer frame;] a platform rigidly attached to said housing, said frame being rotatably supported from said platform for rotation about said vertical axis to permit 360° scanning of said transducer.

12. *A sonar system for installation in a marine vessel which comprises:*

an acoustic transducer for generating a sonar scanning beam and for detecting sound waves reflected from objects;

support means;

mounting means journaled to said support means and mounting said transducer to said support means such that said support means and transducer are independently pivotable about a transverse axis;

vertical scan drive means operably coupled to said trans-

ducer to rotate said transducer about a transverse axis for vertical scanning without affecting the independent pivotability of said transducer and support means;

horizontal scan drive means operably coupled to said transducer to rotate said transducer about a vertical axis perpendicular to said transverse axis for horizontal scanning without affecting the independent pivotability of said transducer and support means;

an elevator well adapted for mounting within the hull of a ship adjacent the keel and open at the lower end;

a watertight housing enclosing said transducer and transducer drive means mounted within said elevator well;

a lift mechanism connected to said housing for raising and lowering the housing within the elevator well to advance said transducer to a scanning position below the keel of a ship and to retract the housing to a rest position within said well for protection of said transducer when not in use; and

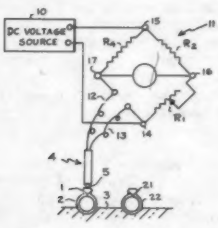
[The system of claim 11 further including] guide members attached to said housing and abutting the inner walls of the elevator well to prevent lateral movement of the housing within the well and permit free flow of water past the housing as the housing is raised and lowered.

B1 4,255,962 (40th)

METHOD AND MEANS OF RAPIDLY DISTINGUISHING A SIMULATED DIAMOND FROM NATURAL DIAMOND

Leland E. Ashman, Belmont, Mass.; assignor to Ceres Corporation, Waltham, Mass.

Reexamination Request No. 90/000,083, Oct. 13, 1981.
Reexamination Certificate for Patent No. 4,255,962, issued Mar. 17, 1981, Ser. No. 885,502, Apr. 10, 1978.
U.S. Cl. 374/44 Int. Cl.³ G01N 25/18.



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 11–18 is confirmed.

Claims 1 and 2 have been disclaimed.

Claims 3–10, 20–22 and 24–26, having been finally determined to be unpatentable, are cancelled.

Claims 19 and 23 are determined to be patentable as amended:

New claims 27–32 are added and determined to be patentable.

23. A method of distinguishing diamond gems from lower conductivity gems comprising the steps of:

providing a test probe having a small gem contacting tip, the tip comprising a small mass of high conductivity thermal contact material *having a small gem contacting surface* and small heat-flow and temperature-sensing means for subjecting the tip to heat flow and for sensing the temperature of the tip,

preheating the probe tip by applying electric power to the heat flow means in the tip;

positioning the tip of the probe against a gem and subjecting the gem to heat flow [relative to] *from the heat flow means in* the probe tip *while applying electric power to the heat flow means, the heat flow means being in sufficiently close thermal relationship with the small gem contacting surface of the probe tip that the heat flow means is thermally responsive to the test gem within a few seconds while power is applied thereto;*

sensing a temperature of the probe tip within a few seconds after subjecting the gem to said heat flow; and

providing an indication of the thermal conductivity of the gem based on the temperature of the probe tip;

the contact material providing an intimate thermal contact between the gem and the heat-flow and temperature sensing means, substantially all heat flow relative to the tip being through the high conductivity gem when contacted;

the contact area between the tip and gem and the thermal mass of the tip being sufficiently small that the difference in temperature of the probe tip, with and without heat flow relative to a contacted 0.5 carat diamond, is dominated by the conductivity of the diamond independent of the gem mounting; and

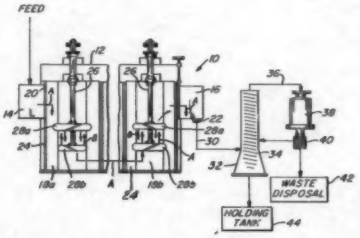
the thermal mass of the tip being sufficiently small that the temperature of the tip reaches near steady state relative to the temperature of the main body of a diamond gem within a few seconds of a change in heat flow between the tip and the gem.

B1 4,261,953 (41st)

LIME SLAKING APPARATUS

Henry J. Gisler, Denver, Colo. assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Reexamination Request No. 90/000,122, Dec. 10, 1981.
Reexamination Certificate for Patent No. 4,261,953, issued Apr. 14, 1981, Ser. No. 16,260, Feb. 28, 1979.
U.S. Cl. 422/162 Int. Cl.³ C04B 1/08.



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 1 is determined to be patentable as amended:

Claims 2–9, dependent on amended claims, are determined to be patentable.

1. A lime slaking system for the hydration of lime, said system comprising: vessel means for containing a mass of material including at least one reaction chamber to contain such a mass of material during hydration of the lime content of such mass and an inlet for feeding such material into said reaction chamber and an outlet to permit withdrawal of product from said reaction chamber; agitator means, *including impellers,* associated with said vessel means and operable for agitating such mass of material contained in said reaction chamber; flow inducing means [associated] *integral* with said [agitator means] *impellers* and cooperable therewith to promote movement of such contained mass of material from said inlet toward said outlet; first comminution means integral with said

[agitator means] *impellers* and concomitantly movable therewith for comminution of the lime particle content of such mass of material simultaneously with such agitating and such movement thereof in a manner to promote high intensity inter particle contacts between such lime particles in such mass for driving such hydration reaction at a reaction rate greater than the spontaneous hydration rate of such lime particles through a receding surface reaction mechanism to produce within said reaction chamber a product mass including a hydrated lime component and a residual component; processing means communicating with said outlet of said reaction chamber to receive such product from said reaction chamber for processing thereof; said processing means including classifying means for separating such product into such hydrated lime component and such residual component and second comminution means associated with said classifying means for comminution of such residual component and recycling of at least a portion of such residual component to said classifying means for additional processing thereof through said processing means.

Sublett, Kenneth L., to Western Marine Electronics Company. Sonar scanning mechanism. B1 3,553,638, Cl. 367—12.

Western Marine Electronics Company: *See*—
Sublett, Kenneth L. B1 3,553,638.

Gisler, Henry J., to Joy Manufacturing Company. Lime slaking apparatus. B1 4,261,953, Cl. 422—162.

Joy Manufacturing Company: *See*—
Gisler, Henry J. B1 4,261,953.

Ashman, Leland E., to Ceres Corporation. Method and means of rapidly distinguishing a simulated diamond from natural diamond. B1 4,255,962, Cl. 374—44.

Ceres Corporation: *See*—
Ashman, Leland E. B1 4,255,962.

REISSUES

JANUARY 11, 1983

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

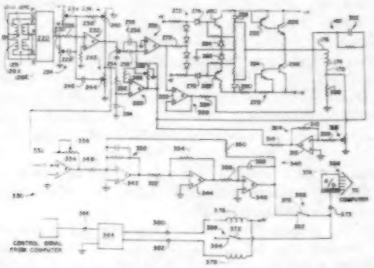
Re. 31,120
IMBALANCE DETERMINING APPARATUS AND METHOD

Thomas J. Bacsanyi, Novi, Mich.; Edward J. Harmon, deceased, late of Wixom, Mich. (by Patricia Harmon, joint personal representative), and by National Bank of Detroit, joint personal representative, Detroit, Mich., assignors to Ransburg Corporation, Indianapolis, Ind.

Original No. 4,060,003, dated Nov. 29, 1977, Ser. No. 733,433, Oct. 18, 1976. Application for reissue Aug. 13, 1979, Ser. No. 65,967

Int. Cl.³ G01M *1/08*

U.S. Cl. 73—483 **12 Claims**



18. A method for determining the amount and location of imbalance in an article having an axis about which it is to be balanced comprising the steps of positioning the article on an article receiving means with the axis at a predetermined location thereon, applying at least first and second forces to the article receiving means at at least first and second locations about the axis to bring the article reveiving means into a neutral orientation, and determining the amount and location of the force required to bring the article receiving means into neutral orientation, the determining step comprising the steps of generating outputs representative of the amount and location of each applied force and combining these force-representative outputs into an output representative of a composite force at a single location, *the first and second forces being applied to the article receiving means substantially 90° apart about the axis at substantially equal distances from the axis, the step of combining the force-representative outputs comprises the steps of squaring the magnitudes of the first and second force-representative outputs, summing the squares of the magnitudes, taking the square root of the sum, determining which of the first and second force-representative outputs is smaller, and dividing the smaller force-representative output by the square root of the sum.*

Re. 31,121
CONTROL DEVICE FOR PROSTHETIC URINARY SPHINCTER CUFF

Robert H. Reinicke, Mission Viejo, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Original No. 4,167,952, dated Sep. 18, 1978, Ser. No. 884,864, Mar. 9, 1978. Application for reissue Aug. 8, 1980, Ser. No. 176,546

Int. Cl.³ F16K *17/18*; A61B *17/00*; A61F *1/00*

U.S. Cl. 137—493 **27 Claims**

1. A device useful with a prosthetic [urinary sphincter valve] *inflatable implant* for controlling flow of fluid from a reservoir to a receiver, said device comprising an envelope with a movable wall portion and which envelope is closed except for a first duct connectable to the reservoir and a second duct connectable to the receiver, a control unit in said envelope, said unit including a valve element and a ported seat member for controlling flow of fluid between said ducts, said seat member being spring pressed to a first position in which said valve element may be spring pressed into engagement *with* the seat member for closing the port therein, manually operable means for moving the seat member to a second position, means to prevent the valve element from seating on the seat member when the seat member is in said second position whereby the port in the seat member will be open, and said seat member having an effective area subject to pressure of fluid in said second duct and movable thereby to said second position.

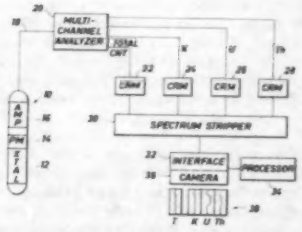
Re. 31,122
METHOD FOR ASCERTAINING OPTIMUM LOCATION FOR WELL STIMULATION AND/OR PERFORATION

Walter H. Fertl, Houston, and Donald B. Vaello, San Antonio, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Original No. 4,187,908, dated Feb. 12, 1980, Ser. No. 947,132, Sep. 29, 1978. Application for reissue Sep. 2, 1980, Ser. No. 183,139

Int. Cl.³ E21B *47/00, 47/05*; G01V *5/00*

U.S. Cl. 166—254 **10 Claims**



6. A method for determining the optimum location along the length of a borehole penetrating an earth formation for instituting well stimulation operations, comprising the steps of:

traversing the borehole penetrating the earth formation with a logging instrument having a gamma ray detector;

detecting natural gamma radiation occurring in the earth formation in the vicinity of the borehole and generating signal functionally and depth-point related to the energy and frequency of occurrence of such gamma radiation;

separating said signals into at least three energy regions corresponding to gamma radiation produced by the decay of the naturally occurring radioactive isotopes of potassium, uranium and thorium occurring in said earth formations at said related depth-point;

processing said separated signals for producing individual count signals each representative of radiation occurring in each of said at least three energy regions at said relative depth-point;

combining the count signals representative of at least one of such energy regions corresponding to gamma radiation produced

by the decay of the radioactive isotopes of potassium and thorium with said remaining energy region count signals corresponding to gamma radiation produced by the decay of the radioactive isotopes of uranium for deriving a differential signal; and

comparing said differential with a preselected reference signal level for determining optimum stimulation locations and at said depth-point location as indicated by said differential signal exceeding said preselected reference signal.

Re. 31,123

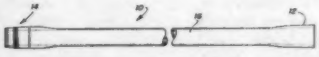
PIPE SECTION AND COUPLING

Billy P. Simmons, Mineral Wells, Tex., assignor to Centron Corporation, Mineral Wells, Tex.

Original No. 4,154,466, dated May 15, 1979, Ser. No. 756,186, Jan. 3, 1977. Application for reissue Jan. 14, 1980, Ser. No. 112,061

Int. Cl.³ F16L *15/00, 21/02*

U.S. Cl. 285—334 **26 Claims**



1. An oilfield flow line pipe section with connection means on the ends thereof for connecting a plurality of sections together in series, said section comprising:

a length of tubing, mating male and female threads formed on the tubing adjacent the ends thereon for use in connecting the sections together;

an annular seal supporting surface in said tubing on one end thereof;

a seal engaging surface in said tubing in the end opposite said seal supporting surface, said seal engaging surface having a frusto-conical shape; and

a compressible seal means mounted on said seal supporting surface of said tubing, said seal means being positioned on said tubing to be compressed between the seal engaging surface of one section and the seal supporting surface of another section when the two sections are connected together by the mating male and female threads, said seal means being of a size to provide effective sealing over a range of diametric clearances between the seal engaging surface of one section and the mating seal supporting surface of a connected section, and said seal engaging surface having an apex angle whose value is no greater than the angle θ and where θ is greater than 0° and less than 90° and where Tan θ equals the normal operational range of diametric clearance between the seal engaging and seal supporting surfaces for effective sealing divided by the lead of the male and female threads on the end of the tubing whereby interconnected sections can be relatively rotated at least one full turn while still providing a seal therebetween.

Re. 31,124

REINFORCED PLASTICS CARRIER FOR PRINTED CIRCUITS

Hendrik Jongetjes, Heenskerk, Netherlands, assignor to Koninklijke Papierfabrieken Van Gelder Zonen N.V., Amsterdam, Netherlands

Original No. 3,937,865, dated Feb. 10, 1976, Ser. No. 436,669, Jan. 25, 1974. Continuation of Ser. No. 818,058, Jul. 22, 1977, abandoned, which is a continuation of Ser. No. 196,782, Nov. 8, 1971, abandoned. Application for reissue Dec. 14, 1978, Ser. No. 969,363

Claims priority, application Netherlands, Nov. 11, 1970, 7016489

Int. Cl.³ D21H *5/18*

U.S. Cl. 162—156 **6 Claims**

5. A non-woven glass fiber web characterized in that water in which the web has been kept for 24 hours at 20° C. has a conductivity of not more than 20 μS/cm which consists essentially of E-glass fibers having a thickness of 5–15μ and a length of 5–30 mm, and a binder; said web being made by the steps of:

(a) forming a 0.005–0.05% suspension in water of said fibers and from 5–25%, based upon weight of the fibers, of said binder in swollen particulate form, said particulate binder being polyvinyl alcohol having a degree of hydrolization of 98–100%, a dry particle size of 50–180μ, a degree of swelling in water at 20° C. of 3–8, and having a viscosity, measured as a 4% solution in water at 20° C., of 20–100 cP;

(b) dewatering said suspension on a fiber web making machine to form a wet, non-woven glass fiber web;

(c) heating the wet web obtained in step (b) to a temperature sufficient to dissolve said swollen binder particles in their own swelling water; and then

(d) further heating the web of step (c) at a temperature sufficient to dry the web and to dehydrate and harden the polyvinyl alcohol binder.

6. A process for making a non-woven glass fiber web characterized in that water in which the web has been kept for 24 hours at 20° C. has a conductivity of not more than 20 μS/cm, which comprises the steps of:

(a) forming a 0.005–0.05% suspension in water of E-glass fibers of 5–15μ thickness and 5–30 mm length together with from 5–25%, based upon weight of the glass fibers, of particulate polyvinyl alcohol having a degree of hydrolization of 98–100%, a dry particle size of 50–180μ, a degree of swelling in water at 20° C. of 3–8, and having a viscosity measured as a 4% solution in water at 20° C., of 20–100 cP;

(b) dewatering said suspension on a fiber web making machine to form a wet, non-woven glass fiber web having swollen particulate binder retained therein;

(c) heating the wet web of step *(b) to a temperature sufficient to dissolve said swollen binder particles in their own swelling water; and then*

(d) further heating the web of step (c) at a temperature sufficient to dry the web and to dehydrate and harden the polyvinyl alcohol binder.

PLANT PATENTS

GRANTED JANUARY 11, 1983

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,972
AFRICAN VIOLET NAMED AURORA

Arnold W. Fischer, Hanover, Fed. Rep. of Germany, assignor to Pan American Plant Company, Parrish, Fla.

Filed Apr. 10, 1981, Ser. No. 252,836
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—69 1 Claim

1. A new and distinct African Violet plant, substantially as herein shown and described, characterized by its profuse production of deep purple flowers, each flower having its petals trimmed with a narrow edging of white.

4,973
CHRYSANTHEMUM PLANT

Jack M. Meek, and William E. Duffett, both of Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Jun. 10, 1981, Ser. No. 272,330
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—74 1 Claim

1. A new and distinct cultivar of *Chrysanthemum morifolium*, Ramat., plant known by the cultivar name of Echo, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; spooned anemone capitulum type; ivory white ray floret color; diameter across face of capitulum ranging from 70 to 75 mm. at maturity; uniform nine week flowering response; medium plant height, and upright branching pattern.

PATENTS

GRANTED JAN. 11, 1983

ERRATA

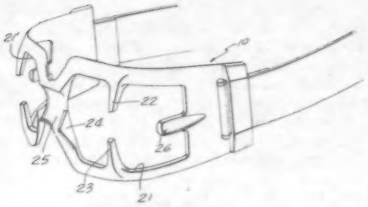
For CLASS	See PATENT NO.
604–043	4,367,740
241–283	4,367,855
419–051	4,368,074
156–051	4,368,214
365–205	4,368,529

PATENTS

GRANTED JANUARY 11, 1983

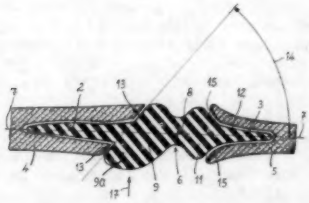
GENERAL AND MECHANICAL

4,367,561
SAFETY SPORT GOGGLES
Ray L. Solari, 1670 Cordova St., Los Angeles, Calif. 90007
Filed Oct. 3, 1977, Ser. No. 838,809
Int. Cl.³ A61F *9/02*
U.S. Cl. 2—439 **1 Claim**



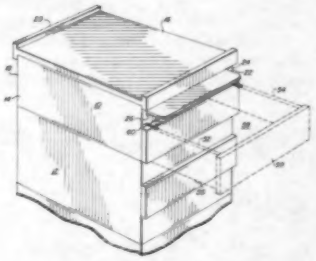
1. Sport safety goggles, comprising:
frame means for being worn on the face of a sport participant, including first frame parts contacting the nose and the temple regions of the wearer and second frame parts defining first and second openings located respectively opposite the eyes of the wearer;
first and second elongated members extending generally vertically from top and bottom portions of the second frame parts into the opening defined by said frame parts;
third and fourth elongated members affixed to the first frame temple region parts and extending generally horizontally into the respective first and second openings; and
fifth and sixth elongated members affixed to the first frame parts contacting the nose and extending respectively into the first and second openings;
all portions of the members extending into said first and second openings being free of contact of each other and the frame parts other than those parts at which they are affixed to said frame parts.

4,367,562
JOINT PROSTHESIS
Georges Gauthier, 85, cours Albert-Thomas, Lyon (Rhone), France
Filed Jun. 16, 1981, Ser. No. 274,239
Claims priority, application France, Jun. 19, 1980, 80 13915
Int. Cl.³ A61F *1/04, 5/04*
U.S. Cl. 3—1.91 **6 Claims**



1. A joint prosthesis for the replacement of a joint between a proximal bone and a distal bone, said prosthesis comprising a unitary elongated body of a flexible, elastic and biocompatible material having a proximal projection receivable in said proximal bone, a distal projection receivable in said distal bone, and a body portion between said projections, said projections and said body being aligned along a common longitudinal axis in an elongate position of said prosthesis, said body portion being formed at an intermediate location therealong with a thin zone defining a transverse articulation axis substantially perpendicular to said longitudinal axis of said body and said projections, said body portion comprising a proximal rounded bulge between said thin zone and said proximal projection and a distal rounded bulge between said thin zone and said distal projection, said bulges being smooth, continuous and extending in all directions outwardly of said projections at the respective junctions of said projections with said bulges, said proximal projection having a greater volume than said distal projection.

4,367,563
COMBINATION BEE POLLEN TRAP AND HIVE CONTAINMENT APPARATUS
William M. Ferguson, P.O. Box 32; Gene R. Howard, Box AH, and Charles F. French, Box 313, all of Thatcher, Ariz. 85552
Continuation of Ser. No. 64,123, Aug. 6, 1979, abandoned. This application Apr. 27, 1981, Ser. No. 258,024
Int. Cl.³ A01K *47/06*
U.S. Cl. 6—4 R **3 Claims**



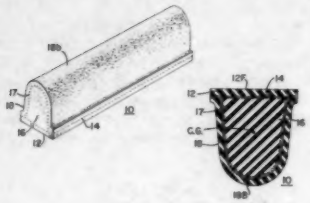
1. A combination pollen trap and containment apparatus for attachment to a standard bee hive, said apparatus comprising:
(a) an attachment frame having opposite sides, a rear wall and a front wall defining an opening therein providing an entrance passageway to the hive, said frame being dimensioned to be positionable with a standard bee hive;
(b) pollen collection means defining apertures therein through which bees may pass and which are restricted to loosen pollen as the bees pass therethrough, said pollen collection means being selectively insertable in said entrance passageway to restrict the passage to cause the bees to pass through said apertures and being removable from said entrance passageway to permit unrestricted access to the associated hive, said apertures extending substantially from the entrance passageway rearward when said pollen collection means is inserted in said entrance passageway, and further including a deck portion extending exteriorly of said entrance in said inserted position;
(c) a pollen collection receptacle removably positioned in said frame and removable from the frame at one of said walls, said receptacle being positioned subjacent the said pollen collection means and substantially co-extensive with said apertures to collect and receive the pollen loosened from the bees when said pollen collection means is inserted in the entrance passage of said apparatus;
(d) containment means having openings therein which permit passage of air but prohibits passage bees therethrough, said containment means being detachably securable on said frame to confine the bees in the hive while permitting ventilation of the hive via the attachment frame.

4,367,564

SWEEPER BRISTLE AND METHOD OF MAKING

John D. Holley, 1872 Cherry St., Montgomery, Ala. 36107

Filed Apr. 14, 1981, Ser. No. 254,174
Int. Cl.[3] A46D *1/04*; A46B *7/10*
U.S. Cl. 15—179 19 Claims



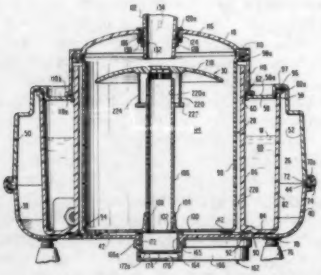
1. A roadbed cleaning solid reinforced elastomeric elongate bristle having at least a first elongate elastomeric member, a second elongate elastomeric member distinct from the first elongate elastomeric member and a first piece of reinforcing stranded material; and wherein said first elongate elastomeric member and second elongate elastomeric member are bonded together with said first piece of reinforcing stranded material therebetween, and said first piece of reinforcing stranded material is further from a bristle center of gravity axis than from the nearest external surface of the bristle, and wherein said first elongate elastomeric member includes a curved external surface extending between two noncontiguous boundary portions.

4,367,565

DOUBLE INSULATED WET/DRY VACUUM EXTRACTION MACHINE

Carl Parise, Reno, Nev., assignor to Parise & Sons, Inc., Sparks, Nev.

Filed May 13, 1981, Ser. No. 263,382
Int. Cl.[3] A47L *9/12*, *9/18*
U.S. Cl. 15—321 16 Claims



1. An electrically double insulated wet/dry vacuum extraction machine comprising:

an outer casing of electrical and thermal insulation material, said casing being generally rectangular in plan configuration and formed of longitudinally spaced vertical end walls, laterally spaced vertical sidewalls, a bottom wall and a top wall, an annular opening within said top wall,

a double walled water tank formed of electrical and thermal insulation material mounted within said casing, said water tank comprising integrally inner and outer vertical walls and a bottom wall, said inner wall being of tubular form and centered within the opening wihtin the top wall of said outer casing,

a removable tubular dump tank mounted coaxially within said tubular inner wall of said water tank,

a dome overlying the opening within said outer casing top wall,

means for locking said dome to said casing, in sealed contact with the top of the dump tank,

means for mounting at least one filter bag assembly within the interior of said water tank inner wall upon removal of said dump tank such that application of vacuum pressure to said dump tank or to the interior of said at least one filter bag assembly permits machine operation selectively under wet and dry vacuum extraction modes, means for supplying vacuum pressure to the interior of said dump tank during said wet vacuum extraction mode, and to the interior of said inner wall of said water tank during said dry vacuum extraction mode, and

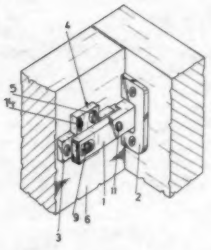
elbow means carried by said dome and projecting therethrough for returning air, water and entrained dirt during wet vacuum extraction mode to the dump tank and air plus entrained dirt to said at least one filter bag assembly when operating under dry vacuum extraction mode.

4,367,566

MOUNTING PLATE FOR A FURNITURE HINGE

Erich Röck, and Herbert Blum, both of Höchst, Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed Jun. 18, 1980, Ser. No. 160,738
Claims priority, application Austria, Jul. 2, 1979, 4601/79
Int. Cl.[3] E05D *7/04*
U.S. Cl. 16—236 4 Claims



1. A multimember base plate assembly for mounting a hinge arm of a furniture hinge to a furniture side wall, said assembly comprising:

a mounting plate adapted to be fastened to a furniture side wall;

a carrier plate adjustably fastened to said mounting plate, said carrier plate including means for mounting thereon a hinge arm to extend along a longitudinal center axis;

said mounting plate having first and second leg portions extending transversely of said center axis on opposite sides thereof, and said carrier plate having first and second wing portions extending transversely of said center axis on opposite sides thereof;

first mounting means located on one side of said longitudinal center axis for attaching said first wing portion of said first leg portion, said first mounting means comprising longitudinal grooves formed in said first wing portion and longitudinal projections on said first leg portion, said projections extending into said grooves;

second mounting means for attaching said second wing portion to said second leg portion on the opposite side of said longitudinal center axis, said second mounting means comprising a threaded hole in said second leg portion, an elongated slot in said second wing portion overlying said threaded hole, and a clamping screw extending through said slot and threaded into said threaded hole, whereby loosening of said clamping screw allows displacement of

said carrier plate relative to said mounting plate in opposite directions; and

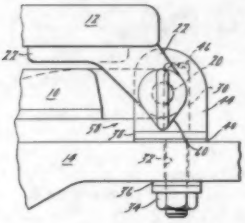
said projections extending from said first leg portion in directions transverse to the direction of elongation of said slot.

4,367,567

DETACHABLE HINGE ASSEMBLY

Jack J. Sendoykas, 23510 Denton - Apt. 227T, Mt. Clemens, Mich. 48043

Filed May 13, 1981, Ser. No. 263,113
Int. Cl.³ E05D 7/10; A47K 13/12
U.S. Cl. 16—263 **3 Claims**



1. A quickly releasable hinge assembly for a conventional toilet seat and a conventional toilet seat cover having mounting portions provided with normally aligned pivot openings, said hinge assembly comprising:

a pair of studs adapted to be mounted in upstanding relation on and detachably fastened to a conventional toilet bowl in laterally spaced mounting holes with which such bowls are conventionally provided;

a pair of blocks adapted to interfit with the mounting portions of said toilet seat and said toilet seat cover and having pivot openings therein alignable with the pivot openings in the mounting portions of said seat and of said cover;

a single elongate hinge pin extending through and rotatable in the pivot openings of said blocks and adapted to extend into and to turn in the pivot openings in the mounting portions of both said seat and of said cover,

said blocks having sockets adapted to accept said studs,

said sockets being disposed transversely of and intersecting the pivot openings in said blocks and the portions of said hinge pin in said openings,

the mentioned portions of said hinge pin having transverse recesses,

said recesses being disposed in a first rotative position of said pin to face toward said sockets and in a second rotative position of said pin to face away from said sockets,

said recesses in said first rotative position complementing said sockets to permit said studs to penetrate said sockets past said pin, and

said studs having transverse slots disposed to accept the mentioned portions of said hinge pin when said studs are fully inserted into said sockets and the pin is turned to said second rotative position to face said recesses away from said sockets, and

a readily accessible, manually operable handle fixed to said pin for turning the same between said first and second positions,

whereby said pin is interlocked with said studs in the second rotative position of said pin to fasten said seat and said cover to said bowl in all rotative positions of said seat and said cover on said bowl,

whereby said hinge pin is disengageable from said studs in the first rotative position of the pin to permit ready removal of said seat and said cover simultaneously from said bowl, and

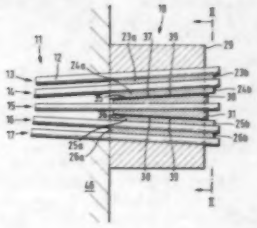
whereby both said seat and said cover can be simultaneously affixed to or removed from said bowl by a single manual manipulation of said handle from a conveniently located position with respect to said seat and said cover.

4,367,568

ANCHORAGE DEVICES FOR A TENSION WIRE BUNDLE OF TENSION WIRES

Martin Weiser, Cologne, Fed. Rep. of Germany, assignor to Strabag Bau-AG, Cologne, Fed. Rep. of Germany

Filed May 20, 1981, Ser. No. 265,354
Claims priority, application Fed. Rep. of Germany, May 24, 1980, 3019978; May 8, 1981, 3118220
Int. Cl.³ E04C 5/12; F16G 11/00
U.S. Cl. 24—122.6 **19 Claims**



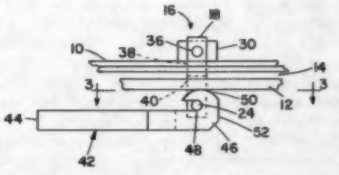
1. An anchorage device for a tension wire bundle of tension wires which are arranged in a plurality of tension wire layers between clamping surfaces, said anchorage device including: a rectangular frame defining an aperture; a plurality of non-slidable clamping plates arranged within the aperture; first clamping surfaces arranged between respective clamping plates and the frame for clamping n-1 of the tension wire layers; a pair of slidable clamping wedges arranged within the aperture centrally with respect to the clamping plates; second clamping surfaces between the clamping wedges for clamping the other tension wire layers; and sliding surfaces located on the clamping wedges and adjacent clamping plates.

4,367,569

CAM LOCKING PIN

Samuel R. Harmon, Clinton, Iowa, assignor to Bee Line Company, Bettendorf, Iowa

Filed Jul. 13, 1981, Ser. No. 282,676
Int. Cl.³ A44B 21/00
U.S. Cl. 24—211 P **1 Claim**



1. A clamping device, comprising: a pin-like element of cylindrical section having first and second ends, said first end including a pair of lugs projecting radially from the opposite sides of the element and said second end including a diametrical slot therein opening axially of the element and providing a pair of diametrically spaced apart legs rigid with the element and lying within the cylindrical surface of the element, a pawl received in the slot and having a long dimension greater than the diameter of the element, a short dimension at least not

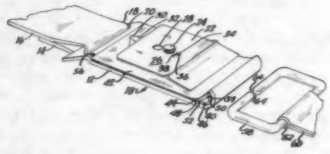
substantially exceeding the element diameter and a thickness commensurate with the transverse dimension of the slot so that the combined thickness of the legs and pawl does not exceed the diameter of the element, pivot means crosswise of the legs and recess and mounting the pawl on the legs for selective angular positioning about said pivot means between a first position in which the pawl lies with its long dimension crosswise of the element and projects diametrically beyond both sides of the element and a second position 90° from the first position in which the long dimension of the pawl extends lengthwise of the element, said recess being of such depth as to accommodate at least part of the pawl in its second position, and a force-applying tool having a pair of hooks spaced apart to straddle the element and removably engageable respectively with the lugs for exerting a force axially of the element and between the lugs and the pawl member in its first position, each of said hooks including a wedging portion of increasing dimension in the direction of the pawl, and said tool further including handle means for manual rocking of the tool about the lugs.

4,367,570

AUTOMATICALLY DISENGAGABLE SAFETY BUCKLE ASSEMBLY

Andrew L. Barbal, 147-29 16th Rd., Whitestone, N.Y. 11357

Filed Aug. 3, 1981, Ser. No. 289,247
Int. Cl.³ A43C *11/08*
U.S. Cl. 24—230 R **9 Claims**



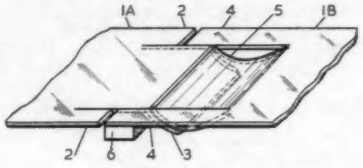
1. An automatically disengagable safety buckle apparatus comprising a plate, one end of said plate having a hook-like shape, the other end of said plate being secured to one end of a first flexible strap, a rod-like element, said rod-like element having a pair of free ends, said pair of free ends being disposed in opposite directions, said pair of free ends each having generally a rounded shape, a second flexible strap, said second flexible strap being secured to said rod-like element, a first resilient spring-like member, said first resilient spring-like member being disposed secured to a first lateral surface of said plate, said first lateral surface of said plate being co-extensive with the concave portions of said hook-like end, said first resilient spring-like member having one end thereof extending upwardly and outwardly from said lateral surface of said plate and residing adjacent said hook-like end, at least one retaining sheet, said retaining sheet being disposed fixedly secured at least along a portion thereof to said plate, said at least one retaining sheet being disposed spaced outwardly from a lateral surface of said first spring-like member, and said lateral surface of said plate, said at least one retaining sheet having one end thereof disposed a greater distance from said first resilient spring-like member than the other end thereof, means to slidably engage said pair of free ends of said rod-like element along at least a portion of said first resilient spring-like member and said at least one retaining sheet, at least one bar, said at least one bar being disposed intermediate said at least one retaining sheet and said first resilient spring-like member, means to releasably restrain the free travel of said pair of free ends of said rod-like member along the length of said at least one bar and at one point along the length thereof.

4,367,571

ADJUSTABLE CLAMP FOR FASTENING AROUND A TUBULAR OR LIKE OBJECT

Graeme K. Speirs, and Anthony D. Cameron, both of Aberdeen, Scotland, assignors to Webco Industrial Rubber Limited, Aberdeen, Scotland

Filed Mar. 7, 1980, Ser. No. 128,356
Int. Cl.³ A44B *21/00*
U.S. Cl. 24—249 R **4 Claims**



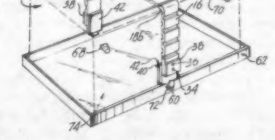
1. A clamp for fitting around a tubular or bar-like object comprising a strip of flexible material one end of which is formed with a number of sets of three parallel tongues projecting longitudinally of the strip and the other end of which is formed with an equal number of sets of three separate parallel tongues also projecting longitudinally of the strip, each set of tongues at said one end consisting of a short tongue flanked by two long tongues which project beyond the short tongue and each set of tongues at said other end consisting of a long tongue flanked by two short tongues and a rigid bar bridging at their tips the two long tongues of each set of two long tongues flanking a short tongue, the rigid bar being located beyond the tip of the short tongue and being fixed to the two long tongues only, each long tongue at said one end of the strip being in line with a short tongue at said other end of the strip and being narrower than the distance between the long tongues flanking the short tongue.

4,367,572

ELASTIC CLAMPING APPARATUS

Anthony L. Zielenski, 63-42 83rd St., Middle Village, N.Y. 11379

Filed Jun. 19, 1980, Ser. No. 161,194
Int. Cl.³ F16F *1/36*
U.S. Cl. 24—301 **10 Claims**



1. An elastic clamping apparatus comprising an elongated resilient member, said elongated member having a lateral surface thereof including a plurality of spaced apart notches, said spaced apart notches extending transverse to the longitudinal axis of said extensible member, an elongated fabric-like reinforcement member, said fabric-like reinforcement member being disposed having a saw-tooth configuration entirely within said extensible member, said fabric-like member residing in a saw-tooth course imbedded within said extensible member and extending substantially along said longitudinal axis of said extensible member, said extensible member having

a pair of free ends, said free ends of said fabric-like member secured to said pair of free ends of said elongated resilient member, each of said free ends having means to removeably secure said each of said free ends to a supporting structure, means to change the amplitude of said saw-tooth configuration when said free ends are forceably displaced away from each other.

4,367,573

METHOD FOR MANUFACTURING A BASELESS INCANDESCENT LAMP ASSEMBLY

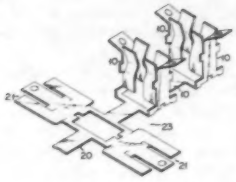
Masaharu Baba, Yokohama; Kiyokazu Honda, Zushi, and Akiyoshi Hashima, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 4, 1980, Ser. No. 213,079

Claims priority, application Japan, Dec. 20, 1979, 54-165987

Int. Cl.³ H01R *33/06*; H01K *3/08*

U.S. Cl. 29—25.13 **7 Claims**



1. A method for manufacturing a baseless incandescent lamp assembly comprising a baseless incandescent lamp having a flattened seal section and external lead wires led outward from said flattened seal section; a main socket body having a lamp holding chamber to contain the flattened seal section of said baseless incandescent lamp; and a pair of conductive holding members disposed inside the lamp holding chamber of said main socket body to hold the flattened seal section of said baseless incandescent lamp and electrically connected with said external lead wires, said method comprising:

a step for molding a conductive plate material into a continuous holding member chain including a number of facing pairs of holding members on both sides of a belt-like coupling section;

a holding step for causing the flattened seal section of said baseless incandescent lamp to be held between said pair of holding members;

a step for cutting off said paired holding members from said coupling section while keeping the flattened seal section of the baseless incandescent lamp between said holding members; and

a step for inserting said holding members holding the flattened seal section of said baseless incandescent lamp therebetween into the lamp holding chamber of said main socket body, thereby fixing said holding members to said main socket body.

4,367,574

FLUORESCENT TUBE HOLDER

Masatoshi Hayakawa, Nagoya; Koei Ogi, Komaki, and Michio Takahara, Iwakura, all of Japan, assignors to CKD Corporation, Komaki, Japan

Filed Aug. 14, 1980, Ser. No. 178,110

Claims priority, application Japan, Jan. 10, 1980, 55-1702

Int. Cl.³ H01J *9/06*

U.S. Cl. 29—25.19 **7 Claims**

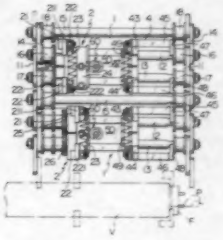
1. A fluorescent tube holder, comprising:

a fluorescent tube holding chuck having a first pair of releasable claws for holding a fluorescent tube in a longitudinally extending direction;

a base holding chuck having a second pair of releasable claws for holding a base for the fluorescent tube on the outer periphery thereof, said base holding chuck being movable in said longitudinally extending direction toward and away from an end of the fluorescent tube;

said fluorescent tube holding chuck and said base holding chuck being advanceable in a first direction; and

means, including a body pivotally receiving said base holding chuck, a roller rotatably mounted on said body, and a



cam provided along said first direction and engaging said roller, for moving said base holding chuck in said longitudinally extending direction toward and away from said end of the fluorescent tube during advancement of said fluorescent tube holding chuck and said base holding chuck in said first direction.

4,367,575

DEVICE FOR SIMULTANEOUS CONNECTION OF A SERIES OF CABLES TO CORRESPONDING CONTACTS

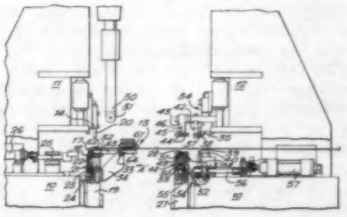
Peter Forster, Egelsbach; Werner Heidotting, Muenster, both of Fed. Rep. of Germany; Wilhelm Janosi, Vienna, Austria, and Georg Kampfmann, Darmstadt-Eberstadt, Fed. Rep. of Germany, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 14, 1980, Ser. No. 167,862

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1979, 2928704

Int. Cl.³ H01R *43/04*

U.S. Cl. 29—33 M **5 Claims**



1. Apparatus for terminating individual wires of a series of wire simultaneously in respective contacts arranged in a row in an electrical connector which apparatus comprises a terminating station comprising a connector support and a ram mounted to reciprocate relative to the support to drive wires into wire-receiving parts of respective contacts of the connector when mounted on the support, and a wire holding head mounted to reciprocate between the terminating station and a wire supply to feed a series of wires from the supply to a location spaced from, and between, the connector and the ram, the wire holding head comprising a wire clamp and a wire guide pivotally mounted on the clamp to extend towards the terminating station, and having a series of wire-receiving passageways retaining wires when held in the clamp, in predetermined, laterally spaced, parallel coplanar relation, an abutment being mounted on the ram arranged to engage the wire guide during a terminating stroke to pivot the guide towards the connector

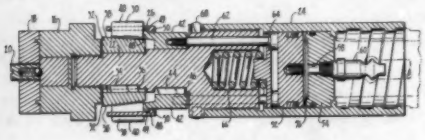
support to guide leading ends of the wires to wire connecting parts of respective contacts in the connector.

4,367,576

SKIVING AND ROLLER BURNISHING TOOL

Lawrence C. Dickinson, 2255 Eva Adams, Reno, Nev. 89504

Filed Sep. 2, 1980, Ser. No. 183,664
Int. Cl.³ B24B *39/00, 39/02*
U.S. Cl. 29—90 R 9 Claims



1. A skiving and roller burnishing tool for cutting and burnishing the interior of a cylinder or other workpiece comprising:

a cutter assembly;

an elongate drive member coupled to the cutter assembly and adapted to rotate the cutter assembly to drive the cutter assembly in a forward direction through the interior of the workpiece to cut the interior of the workpiece to its approximate final diameter;

a roller race generally axially aligned with and to the rear of the cutter assembly and coupled to the drive member, said roller race having frustoconical configuration in section tapering radially outwardly forwardly;

a plurality of rollers distributed circumferentially about and bearing on the roller race, said rollers being frustoconical in section so that the radially outermost surface of each roller is generally parallel to the axis of the drive member;

a roller cage having a plurality of slots, said roller cage circumscribing and being spaced apart from the roller race so that said slots and said roller race together define a plurality of cavities for receiving individual rollers;

a roller pusher having (1) a forward extension for directly engaging the rear surfaces of the individual rollers when the pusher is moved forwardly relative to the roller race to push the follers forwardly to cause the rollers to translate radially outward along the tapered surface of the roller race within the cavities defined by the roller cage, and (2) a lip for directly engaging the roller cage when the pusher is moved rearwardly relative to the roller race to draw the rollers rearward and allow the rollers to translate radially inward;

means for applying a selected constant axial force on the roller pusher in a forward direction to drive the forward extension of the pusher against the rollers so that the individual rollers are moved forwardly and biased outwardly by the frustoconical roller race and apply a selected radial burnishing force to the interior of the workpiece, said rollers automatically adjusting to variations in the diameter of the interior of the workpiece; and

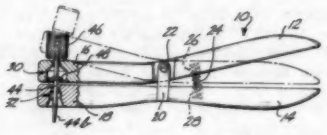
means for retracting the roller pusher when the axial force is released to draw the roller cage rearwardly so that the rollers move rearwardly and radially inward and the tool can be withdrawn from the workpiece.

4,367,577

EXTRACTOR FOR REMOVING BROKEN TUBING TIPS FROM CATHETER HUBS

Nicholas S. Muff, 1044 Rolling Ridge Dr., Sedro Woolley, Wash. 98284

Filed Dec. 8, 1980, Ser. No. 214,421
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—234 11 Claims



1. An apparatus for extracting a tubing segment from a member in which said tubing segment is inserted comprising:

first and second handles terminating at one end thereof in respective first and second jaw portions, said second jaw portion including an aperture,

means joining said handles for relative swinging movement so that, as the other ends of said handles are swung toward each other, said jaw portions are separated,

grasping means coacting with said first jaw portion for insertion into and grasping said tubing segment,

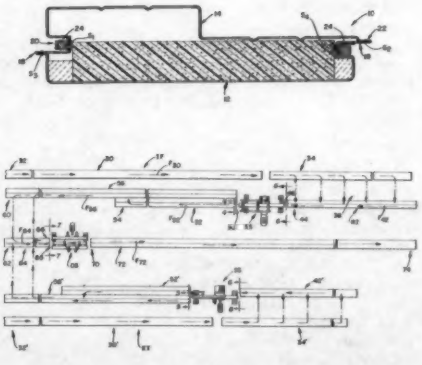
coaction means on said second jaw portion for coacting with said member so that relative axial force is exerted on said tubing segment and said member as said jaw portions are separated, said coaction means defining a receptacle for receiving an extracted tubing segment, said receptacle communicating with said aperture, said grasping means extending through said aperture and said receptacle.

4,367,578

METHOD OF PLACING STITCHES IN A MOVING PANEL

Claris E. Johnson, Alexis, and Hubert C. Crump, Galesburg, both of Ill., assignors to Butler Manufacturing Company, Kansas City, Mo.

Division of Ser. No. 945,551, Sep. 25, 1978, Pat. No. 4,245,766.
This application Jun. 10, 1980, Ser. No. 158,220
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—429 2 Claims



1. A method of placing stitches in a moving panel comprising steps of:

moving a first panel along a fabrication path, said panel having major planar faces and longitudinal edge flanges;

moving the first panel along a conveyor with such first panel having planar faces oriented to be essentially horizontal;
tilting such first panel on edge to orient the planar faces thereof to be essentially vertical;
moving such first tilted panel along a conveyor;
moving the first panel through a stitching machine;
placing first stitches in such first tilted panel while such first tilted panel is moving;
moving the first stitched panel along a conveyor;
tilting the first stitched panel to orient the planar faces to be essentially horizontal;
further including a step of moving a second panel along a second conveyor with such second panel having planar faces oriented to be essentially horizontal, said second panel having major planar faces and longitudinal edge flanges;
tilting such second panel on edge to orient the planar faces thereof to be essentially vertical;
moving such second panel along another conveyor;
moving the second panel through a stitching machine;
placing other stitches in such second tilted panel while such second tilted panel is moving;
moving the second stitched panel along a further conveyor;
tilting the second stitched panel to orient the planar faces thereof to be essentially horizontal;
placing insulation into said second panel;
superposing the first and second stitched panels;
moving the superposed panels through a stitching machine;
coupling stitching strips to the panel edge flanges;
positioning the coupling strips between the stitching machine during the panel tilting steps; and
stitching the first and second panels together while those panels are moving.

4,367,579

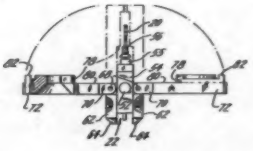
METHOD OF CONNECTING A CRYSTAL TO A CRYSTAL HOLDER

Alan Kaplan, West Caldwell, N.J., assignor to Emkay Manufacturing Co. Inc., East Hanover, N.J.

Continuation of Ser. No. 34,780, Apr. 30, 1979, Pat. No. 4,236,487. This application Oct. 6, 1980, Ser. No. 194,078

Int. Cl.³ B23Q *7/00*

U.S. Cl. 29—559 **5 Claims**



1. A method of externally connecting a crystal to a crystal holder having an insulated body comprising the steps of:
(a) pivoting a pair of mask holders of the crystal holder to an open position;
(b) connecting the crystal to the crystal holder in an open series circuit in the insulated body holder;
(c) placing masks in the mask holders and pivoting the mask holders to a closed position to place the masks in alignment with each other and sandwich the crystal therebetween; and
(d) positioning openings in the mask adjacent to the crystal to permit plating thereon as desired.

4,367,580

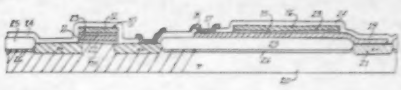
PROCESS FOR MAKING POLYSILICON RESISTORS

Daniel C. Guterman, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 21, 1980, Ser. No. 132,702

Int. Cl.³ H01L *21/22*

U.S. Cl. 29—571 **6 Claims**



1. A method of making a resistor element in an integrated semiconductor device of the type having at least one active circuit element at a face of a semiconductor body, comprising the steps of:
depositing a first layer of polycrystalline silicon on said face,
introducing conductivity-determining impurity into said first layer to establish a first level of impurity doping therein,
patterning said first layer to define a resistor area and a first electrode area for said active circuit element, the resistor area and the first electrode area being spaced from one another on said face,
depositing a second layer of conductive material on said face overlying said first layer but insulated therefrom, and
patterning said second layer to define a mask area over part of said resistor area and a second electrode area for said active circuit element.

4,367,581

METHOD OF MANUFACTURING AN ARRAY OF SOLAR CELLS

Kranz Köhler, Unterhaching, Fed. Rep. of Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Fed. Rep. of Germany

Division of Ser. No. 144,954, Apr. 29, 1980, Pat. No. 4,296,270. This application Oct. 10, 1980, Ser. No. 195,752

Claims priority, application Fed. Rep. of Germany, May 11, 1979, 2919041

Int. Cl.³ B23P *17/00*; H01L *31/04*

U.S. Cl. 29—572 **10 Claims**

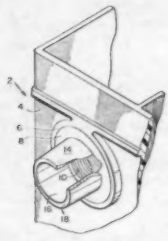
1. A method of manufacturing a solar cell array having a plurality of solar cells with N-type and P-type conducting zones, a plurality of contacting connectors electrically interconnecting the N-type with the P-type conducting zones of adjacent cells, and with each contacting connector extending outwardly from the periphery of a respective cell, comprising:
applying a foil ribbon to the surface of each of the plurality of solar cells so that each ribbon extends outwardly from at least one edge of each solar cell;
securing each ribbon to its repective solar cell to form each contacting connector;
applying a wave-shaped corrugated profile to each contacting connector at least at a portion of each connector extending outwardly from the at least one edge of each solar cell;
overlapping at least a portion of the contacting connectors of adjacent solar cells without the connector of one solar cell contacting an adjacent solar cell; and
connecting the overlapping portions of the contacting connectors of adjacent solar cells.

4,367,582

METHOD FOR MANUFACTURING A BATTERY HAVING A TEMPORARY SIDE TERMINAL THEREON

Harry M. Channing, South Lake Tahoe, Calif.; John M. Nees, Wyomissing, and William J. Eberle, Reading, both of Pa., assignors to General Battery Corporation, Reading, Pa.

Division of Ser. No. 121,780, Feb. 14, 1980, Pat. No. 4,263,379.
This application Sep. 22, 1980, Ser. No. 189,044
Int. Cl.[3] H01M *2/06, 2/30*
U.S. Cl. 29—623.1 1 Claim



1. A method for manufacturing a lead acid storage battery having electrical terminals in the side wall of said battery for achieving electrical interconnections, said method comprising the steps of:

(a) molding a battery case;

(b) casting electrical terminals, said electrical terminals having a portion thereof which extends through the side wall of said battery case and further having a conical outer surface which tapers toward the free end thereof and a passageway which extends from the free end thereof through to said terminal through said battery case;

(c) assembling battery components to complete the said storage battery;

(d) forming and charging said battery as formed in step (c);

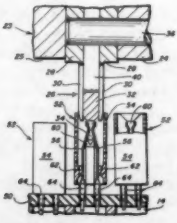
(e) removing said portion of the battery terminal having a conical outer surface which tapers toward the free end thereof and a passageway which extends from the free end thereof through to said terminal in said battery case.

4,367,583

CONNECTOR MOUNTING PRESS

James S. C. Baccei, Terryville, Conn., assignor to Litton Systems, Inc., Watertown, Conn.

Filed Mar. 12, 1981, Ser. No. 242,914
Int. Cl.[3] H05K *3/32*
U.S. Cl. 29—739 3 Claims



1. A connector mounting press for pressing loosely fit connectors into a printed circuit board wherein the connector comprises a housing and two adjacent rows of press fit contacts and the circuit board comprises rows of plated through apertures, the mounting press comprising:

selectively horizontally locatable bed means for supporting a circuit board,

insertion head means supported above said bed means for vertical displacement relative thereto,

said insertion head means including a first comb means, a second comb means, and alignment means,

said alignment means being slidably mounted between said first and second comb means for initially engaging the interior of a selected connector and accurately positioning said connector for reception of said first and second comb means,

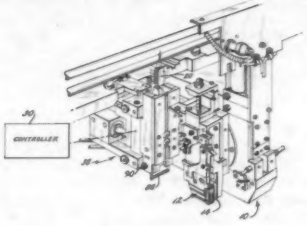
the slidable mounting of said alignment means with respect to said first and second comb means allowing both of said comb means to be displaced relative to said alignment means to engage first and second rows of contacts subsequent to the engagement of the connector by said alignment means while said alignment means maintains accurate positioning of said connector, whereby continued vertical displacement of said insertion head causes said first and second comb means to press said rows of contacts of said connector into mating engagement with rows of plated through apertures.

4,367,584

METHOD AND APPARATUS FOR STRAIGHTENING LEADS AND VERIFYING THE ORIENTATION AND FUNCTIONALITY OF COMPONENTS

Stanley Janisiewicz, Endwell; Michael M. Levie, and Andrew J. Czebiniak, both of Binghamton, all of N.Y., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Filed Sep. 15, 1980, Ser. No. 187,368
Int. Cl.[3] H05K *3/30;* B23P *6/00;* B21F *1/02*
U.S. Cl. 29—837 18 Claims



1. An apparatus for testing components of the type having a body and dual, in-line, parallel leads projecting from said body, said apparatus comprising:

circuit means for determining defective components;

contact means for connecting said leads to said circuit means for said testing and having plural electrical contacts engageable with respective ones of said leads; and

lead straightening means for forming said leads for insertion and for straightening bent leads during said testing.

13. A method of testing the functioning of electronic components having leads, some of which may be bent and straightening said bent leads, prior to insertion of said components into a printed circuit board by an inserter, comprising the steps of:

guiding said components to a test position in a test assembly having lead engageable electrical contacts;

providing selected electronic logic combinations from a controller adapted to simulate operating modes of different selected components;

engaging said contacts with said leads, upon command, and applying said selected logic combination to said contacts during said engagement to effect said testing;

providing said controller with a characteristic number indicative of a good component;

sensing a resultant output of said component by said controller;

comparing said resultant output and said characteristic number to determine good and bad test results;

forming said leads during said testing for insertion into said printed circuit board; and

straightening said bent leads during said testing.

4,367,585

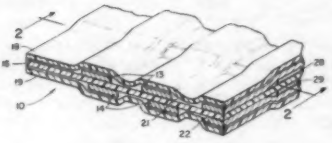
METHODS FOR THE TERMINATION AND CONNECTORIZATION OF MULTI-CONDUCTOR FLAT CABLE

William A. Elliott, Reynoldsburg, and Thomas J. Taylor, Gahanna, both of Ohio, assignors to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 106,599, Dec. 26, 1979, Pat. No. 4,310,365. This application Aug. 31, 1981, Ser. No. 298,219

Int. Cl.³ H01R *43/00*

U.S. Cl. 29—857 21 Claims



1. A method for the termination and connectorization of a flat cable having two arrays of conductors separated by a center insulative film, with two outer films respectively positioned to overlie a different one of the two arrays of conductors, and adapted to laminate the two arrays of conductors between the center and the respectively associated outer films when said films and arrays of conductors are advanced through a nip of a pair of laminating rollers of a laminating apparatus, said method further including the steps of:

positioning and securing a spaced array of insulative isolating members on each side of, and extending transversely across, the center film at predetermined spaced cable termination points therealong prior to that film, together with the isolating members thereon, being advanced through the nip of the laminating rollers, the members on opposite sides of the center film being aligned in pairs, and of a type of material that allows the two arrays of conductors in the laminated cable to subsequently be readily separated from the center film for connectorization;

terminating a predetermined length of the cable in a region of a pair of aligned isolating members, and thereafter:

peeling conductor end portions in each array, together with that portion of the associated outer film bonded thereto, that are co-extensive with an adjacent terminating isolating member away from at least the center film;

positioning the conductor end portions of each separated array thereof into an aligned relationship with respectively associated contacts of a connector, and

securing said aligned conductor end portions to said connector contacts.

4,367,586

DUSTLESS CUTTER

James G. Baranczyk, and Richard J. Baranczyk, both of 208 Main St., P.O. Box 211, Pulaski, Wis. 54162

Filed Dec. 15, 1980, Ser. No. 246,331

Int. Cl.³ B23D *29/00*

U.S. Cl. 30—241 19 Claims

1. A dustless cutter device adapted to be connected with an electric drive motor which comprises:

a flat cutter blade;

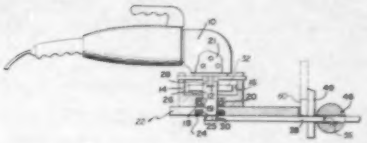
an eccentric drive means for driving said flat cutter blade in a reciprocating motion;

support means for supporting said flat cutter blade and said eccentric drive means;

said support means including a housing with a flat plate surface,

guide rails secured to said flat plate surface in spaced parallel relationship for guiding said flat cutter blade in a reciprocating motion relative to said flat plate surface,

a die means secured to said flat plate surface relative to said cutter blade and spaced therefrom for passage of a sheet of material to be cut;



said flat cutter blade having a cutting end formed at an angle relative to its direction of reciprocating motion with the slope of the angular end such that the forward edge of the cutter blade is shorter than the trailing edge; and

said eccentric drive means and said flat cutter blade being so related that the forward edge of the cutter blade during its maximum cutting stroke will not contact the sheet of material to be cut with the trailing edge passing completely through said material to be cut.

4,367,587

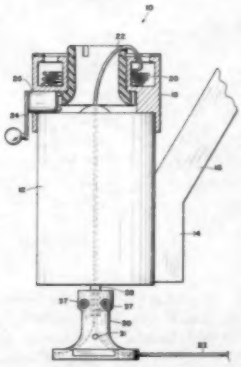
FILAMENT VEGETATION TRIMMER

Lauren G. Kilmer, 1927 E. 35 Pl., Tulsa, Okla. 74105

Continuation-in-part of Ser. No. 958,519, Nov. 7, 1978, Pat. No. 4,265,019. This application Dec. 11, 1980, Ser. No. 215,180

Int. Cl.³ A01D *50/00*

U.S. Cl. 30—276 4 Claims

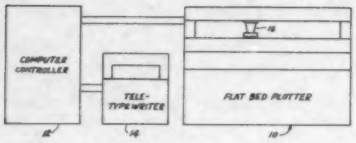


1. A filament vegetation trimmer having a rotary drive means; a hollow shaft attached to the drive means, said shaft terminating at a gyrational end; a gyrator head, one end of which is attached to said gyrational end the other end forming a trimming end and having an outwardly curved axial opening therethrough to a transverse groove at the trimming end, and means to supply the filament from a non-rotatable supply source through said shaft and said opening to said gyrator head, the improvement comprising intrinsic means intersecting the groove and the axial opening to create a corridor to cause the filament to be maintained in said transverse groove and to extend outwardly forming a rotary whip for trimming.

4,367,588
PROCESS FOR CUTTING STRIPPABLE FILM

Thomas A. Herbert, 3044 Old Yellow Springs Rd., Fairborn, Ohio 45324

Continuation-in-part of Ser. No. 909,153, May 24, 1978, abandoned. This application Jun. 20, 1979, Ser. No. 50,241
Int. Cl.³ B26D *3/08*; B43L *13/00*
U.S. Cl. 33—1 M 1 Claim

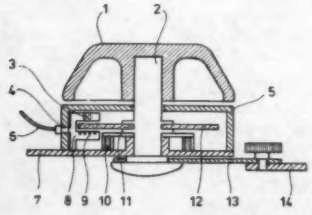


1. The process of cutting curvilinear patterns in the plastic layer on a strippable material with a computer controlled X-Y flat bed plotter wherein the computer is programmed to move the plotting head over the strippable material with desired pattern, comprising: placing the diamond point cutter in the plotting head of the flat bed plotter; adjusting the scribe pressure on said diamond point cutter to between 200 and 300 grams; moving the plotter head over the strippable material in response to the computer command at a head speed of between 20 and 30 inches per second with a plotter head acceleration between 0.4 G and 0.7 G.

4,367,589
DRAFTING MACHINE HEAD

Joachim Mainka, Friedrich Ebert Str., D 8080 Fürstenfeldbruck, and Gerd Vogl, Zugspitzstr., D 8031 Eichenau, both of Fed. Rep. of Germany

Filed Mar. 26, 1981, Ser. No. 247,794
Int. Cl.³ B43L *13/14*
U.S. Cl. 33—1 N 14 Claims



1. A drafting machine head, comprising:

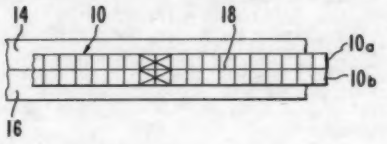
a housing a drawing ruler carrier, a shaft rotatably mounted in said housing and having said ruler carrier and graduated disc attached thereto, scanning elements mounted in said housing and associated with said graduated disc, an up/-down counter electrically associated with said sensor, one or more electronic data stores, the angular position of said rotatable drawing ruler carrier on said graduated disc being incrementally detected by means of said scanning elements and being converted into displayable angular values by said up/down counter; and

an electrically actuatable locking unit for restricting the rotary movement of said drawing ruler carrier, said unit being active in any angular position, an electronic comparator electrically connected to said unit and said one or more electronic data stores in such a way that the angular values detected on the graduated disc and the angular values contained in said data store trigger the locking if they are in coincidence.

4,367,590
CALIBRATED TAPE FOR USE IN CONSTRUCTING WALL WITH VERTICAL STUDS

Craig R. Winter, 296 Manfre Rd., Watsonville, Calif. 95076; Stanley M. Bird, Sr., and Keneth E. Presba, both of Star Route, Georgetown, Calif. 95634

Filed Mar. 27, 1981, Ser. No. 248,398
Int. Cl.³ G11B *3/10*
U.S. Cl. 33—137 R 12 Claims

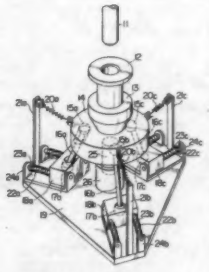


1. A device for use in determining the attachment locations of a plurality of spaced studs on a pair of spaced, parallel plates of a wall comprising: a tape of one-piece construction and having a pair of opposed faces, one of the faces having a plurality of indicia thereon at spaced locations along the length of the body, the opposite face of the tape having means around for attaching the tape to said plates when the plates are tacked together, the tape being separable into halves along a longitudinally extending line, the indicia on one tape half being identical to and transversely aligned with the indicia on the other tape half whereby, when the plates are tacked together and the tape halves are attached to respective plates, the tape halves will separage from each other and remain secured to respective plates when the plates are untacked and moved away from each other.

4,367,591
FITTING DEVICE

Hisaaki Hirabayashi, and Koichi Sugimoto, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 8, 1980, Ser. No. 184,915
Claims priority, application Japan, Sep. 7, 1979, 54-114197
Int. Cl.³ B25G *3/00*; F16D *1/00*; F16G *11/00*
U.S. Cl. 33—169 C 13 Claims



1. A fitting device for orienting one of a peg member and a hole formed in a hole member, comprising:

a stationary base;

a movable base for supporting said one of said peg member and said hole member; and

a three-dimensional spatial mechanism having at least six degrees of freedom connecting said movable base to said stationary base, said three-dimensional spatial mechanism comprising at least three sliders supported on said stationary base for movements in a direction substantially perpendicular to the axis of said one of said peg member and

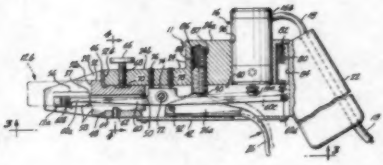
said hole member, at least three links each connected at one end thereof to one of said at least three sliders and at the other end thereof to said movable base through a turning pair, operation regulating means for allowing rotational movement of said movable base relative to said stationary base and for limiting movement of said movable base relative to said stationary base in a direction substantially perpendicular to the axis of said one of said peg member and said hole member in a predetermined range, and means for resiliently retaining said movable base in a predetermined position.

4,367,592

GAUGE APPARATUS AND METHOD FOR MEASURING THE DEPTH OF A CIRCUMFERENTIAL GROOVE ON THE INSIDE WALL OF A TUBULAR PART

Douglas Thompson, Redmond, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 24, 1980, Ser. No. 220,137
Int. Cl.³ G01B 5/12
U.S. Cl. 33—172 E 10 Claims



1. A gauge apparatus for measuring the depth of a circumferential groove on the interior wall of a tubular part, comprising:

a probe head having an axis of symmetry and defining a forward end adapted for insertion into an open end of a tubular part that has an interior circumferential groove and said probe head defining a rear end, said probe head including a relief portion adjacent said rear end to allow cocking of said probe head at a constant skew angle relative to a centerline of said tubular part as said probe head is moved axially within said tubular part;

a support structure to which said probe head is mounted adjacent its rear end so that said support structure can be manipulated for inserting the forward end of said probe head into an open end of a tubular part and cocked at said skew angle with an edge on the forward end of said probe head contacting an inside wall surface of such tubular part at a first head-to-wall surface contact location and an edge adjacent said relief portion of said probe head contacting an inside wall surface of such tubular part at a second head-to-wall surface contact location that is rearwardly spaced from the first contact location;

a probe arm oriented generally parallel to the axis of symmetry of said probe head, said probe arm pivotally mounted on said support structure and having a forward feeler tip end receivably disposed within an opening provided therefor in said probe head, for arcuate movement relative to said probe head so as to be movable between a retracted position recessed within said opening in said head and an operative position protruding transversely from said probe head at a position axially intermediate said forward and rear ends of said probe head so as to contact an interior wall surface of a tubular part into which the probe head has been inserted;

trigger mechanism means mounted on said support structure for actuating said arm to move said forward feeler tip end between said retracted position and said operative position; and

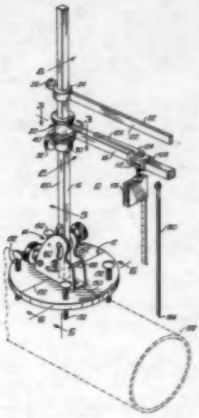
indicator means operatively associated with said probe head and probe feeler means for providing an indication of the magnitude of relative movement of said feeler means with respect to said probe head.

4,367,593

PATTERN DRAFTING TOOL

Loraine T. Whitworth, 5024 S. Sunkist Pl., Tucson, Ariz. 85706

Filed Sep. 14, 1981, Ser. No. 301,456
Int. Cl.³ G01B 3/14
U.S. Cl. 33—174 N 12 Claims



1. A drafting tool for determining true length measurements for patterns of transitions and pipe miter joints, said tool comprising in combination:

(a) a base for defining a plane of reference for one edge of the pattern to be developed;

(b) a post extending upwardly from said base, said post including indicia correlatable with the reference plane and the longitudinal dimension of the pattern to be formed;

(c) a bar extending radially from said post, said bar being positionable angularly about the longitudinal axis of said post in any one of several predetermined positions, said bar including indicia correlatable with the lateral dimensions of one end of the transition or joint being patterned;

(d) an indicator repositionable along said bar to correspond with the lateral dimension;

(e) means for determining the true length distance between said indicator and at least one point lying on the one edge of the pattern for each radial position of said bar; and

(f) means for obtaining the true length distance between adjacent positions of said indicator on repositioning said bar; whereby, the true length distances obtained in combination with the known angular repositioning of said bar provide sufficient information to draft directly the pattern sought.

4,367,594

ALIGNMENT SYSTEM

Malcolm G. Murray, Jr., 220 E. Texas Ave., Baytown, Tex. 77520

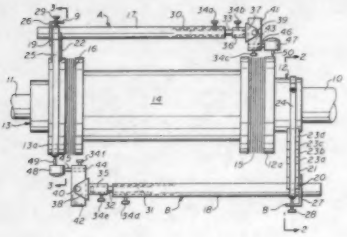
Filed Jan. 14, 1980, Ser. No. 111,779
Int. Cl.³ G01B 3/30
U.S. Cl. 33—181 R 26 Claims

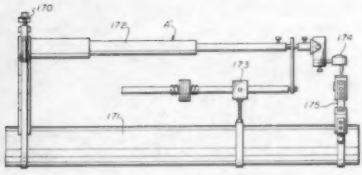
1. An alignment apparatus system comprising in combination:

an alignment fixture comprising a modular radial arm adapted to seat on a first shaft to be aligned, said radial arm being extendable by modular units, an arm extending laterally from said radial arm and axially in regard to said first shaft to be aligned, a metal strap associated with said

radial arm for attaching said radial arm to said first shaft and means located along said metal strap to fasten and adjust said metal strap, a holder connected to said laterally extending arm distal to said radial arm and having a channel therein, and a block for positioning a dial indicator, said block being adjustably mounted in said channel, said dial indicator having a plunger actuated hand for making readings, and

an adjustable fixture post comprising a first block adapted to seat on a second shaft to be aligned and extend radially





therefrom; a pair of metal straps attached to said first block for attaching said first block to said second shaft and means located along said metal straps to fasten and adjust said straps, a pair of substantially parallel members mounted to said block and extending radially therefrom, a second block repositionably mounted between said substantially parallel members for repositioning said second block at various distances from said first block, said second block providing a contact surface for said plunger of the dial indicator.

4,367,595

METHOD AND APPARATUS FOR DRYING PRODUCTS, ESPECIALLY CORN OR PIECE PRODUCTS

Laszlo Szücs; Andras Horvath; Emod 'Sigmond; Imre Szabo, and Verona Toth, all of Budapest, Hungary, assignors to Energiagazdalkodasi Intezet, Budapest, Hungary

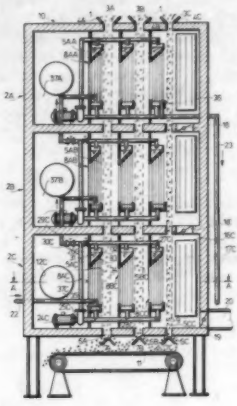
Filed Sep. 4, 1980, Ser. No. 184,184

Claims priority, application Hungary, Sep. 13, 1979, EE2693

Int. Cl.³ F26B *3/04, 21/08*

U.S. Cl. 34—27 **45 Claims**

1. In a method of drying products, comprising the steps of flowing a drying gas stream so as to cause it to pass the product to be dried; contacting the drying gas stream with a desiccant liquid to remove moisture from the gas; and regenerating the desiccant liquid by circulating at least a part of it through regenerating means to remove moisture therefrom; the improvement comprising arranging the product to be dried in at least two product parts; conducting said flowing so that the drying gas stream passes said at least two product parts successively; and performing said contacting each time before the drying gas stream passes each of said at least two product parts or each time after the drying gas stream passes each of said at least two product parts, the drying gas, in the course of passing said product parts once, being subjected to a plurality of said contacting steps for moisture removal with said contacting



steps alternating with the flow of the drying gas stream past each of a plurality of said product parts.

4,367,596

DRYING APPARATUS

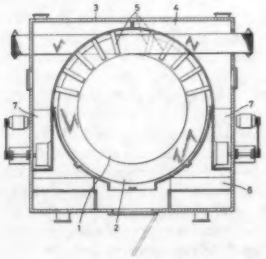
Hirohumi Oaodera, 340, Mizuhai Higashiosaka-shi, Osaka-fu, Japan

Continuation of Ser. No. 966,752, Dec. 5, 1978, abandoned. This application Jun. 11, 1980, Ser. No. 158,388

Claims priority, application Japan, Apr. 17, 1978, 53-52438[U]; Sep. 1, 1978, 53-120854[U]

Int. Cl.³ F26B *13/00*

U.S. Cl. 34—147 **7 Claims**



1. A drying apparatus comprising:

a casing made of a heat insulating material;

a rotary drum mounted within said casing for rotation about a vertical axis;

an endless conveyor spirally wound about said rotary drum and rotatable therewith, said conveyor being in the form of plural, vertically spaced convolutions;

a vertically extending wall transversely surrounding at least a portion of the circumference of said conveyor;

said casing and said wall defining therebetween an enclosed chamber which surrounds at least a portion of the circumference of said conveyor and which is partitioned into at least two pressure compartments and a suction compartment;

means for supplying hot blast under pressure into each of said pressure compartments such that the pressure of said hot blast within all portions of said each of said pressure

compartments is equalized, each of said pressure compartments being individually provided with a separate respective one of said supplying means;

means for injecting said hot blast from said pressure compartments through said wall and for directing said hot blast at equal pressure vertically directly against plural surfaces of said conveyor, said injecting and directing means comprising a plurality of blast pipes extending inwardly from said wall in directions radially of said axis of said rotary drum and orthogonally of said convolutions of said conveyor, said blast pipes having therein openings directed verticaliy toward said surfaces of said conveyor, whereby said hot blast passes, at equal pressure, from said chamber through said plurality of blast pipes and is discharged therefrom through said openings therein in vertical directions against said surfaces of said conveyor, said blast pipes being arranged between adjacent said convolutions, such that each said convolution has blast pipes directing said hot blast directly thereagainst; and

said rotary drum, said conveyor, said chamber, said means for supplying hot blast under pressure into each of said compartments, and said blast pipes being accommodated within said casing.

4,367,597

GAS-LIQUID COOLING APPARATUS

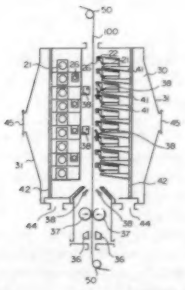
Hiroshi Iida; Tetuya Ohara, both of Himeji, and Masakatu Tuji, Hyogo, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 1, 1980, Ser. No. 211,716

Claims priority, application Japan, Dec. 13, 1979, 54-161914; Sep. 29, 1980, 55-135680; Sep. 29, 1980, 55-135681

Int. Cl.³ F26B *13/02*

U.S. Cl. 34—155 **8 Claims**



1. A gas-liquid cooling apparatus for cooling a strip-like material moving substantially vertically, said apparatus comprising: a first nozzle means for discharging at least one gas jet stream and a second nozzle means for discharging at least one liquid jet stream in a direction intersecting the gas jet stream at an acute angle for forming only a single narrow jet of a gas-liquid mixture in front of said nozzle means; said apparatus being directed toward the material to be cooled with all of said jet of gas-liquid inclined upwardly toward the material at an angle for being bounced off said strip-like material at an angle of reflection substantially equal to the angle of upward inclination of said jet; one of said nozzle means having an inclined liquid guide plate thereabove extending at least as close to the material to be cooled as the outlet of said nozzle means for receiving substanially all of the gas-liquid mixture bounced off said strip-like material and inclined downwardly and away from the material for collecting the liquid which is separated from the gas-liquid mixture after it is bounced off the material to be cooled and carrying the liquid away from the material.

4,367,598

THERMAL TREATMENT APPARATUS FOR BULK MATERIAL

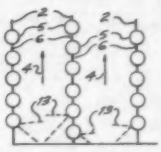
Bruno Hillinger, Hinterbrühl, and Georg Bechmann, Vienna, both of Austria, assignors to Waagner-Biro Aktiengesellschaft, Austria

Filed Jun. 20, 1980, Ser. No. 161,382

Claims priority, application Austria, Jun. 25, 1979, 4422/79

Int. Cl.³ F26B *17/26*

U.S. Cl. 34—164 **3 Claims**



1. In vibratory conveyor apparatus for transporting bulk material, such as lime or coal, in a stream from an entry or feed side to a discharge side and including means for thermally treating the bulk material as the same is transported through the apparatus, the improvement comprising, said thermal treatment means being constituted by a plurality of vertical partition members provided in said vibratory conveyor apparatus, each extending in the direction in which the stream of bulk material is transported, so as to define between them a plurality of channels, said plurality of vertical partition members constituting means for dividing the bulk material stream into parallel partial streams separated from each other over at least a part of the length of the vibratory conveyor apparatus, and means operatively associated with said vertical partition members for carrying a thermal transfer fluid therein, and further including means for screening the fine portion of the bulk material disposed in said plurality of channels between said feed and discharge sides.

4,367,599

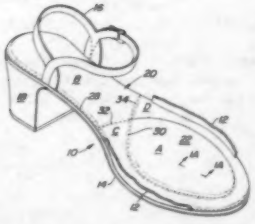
SHOE SOLE STRUCTURE HAVING CONTROLLED SLIPPAGE

Frederick J. Diamant, 20 E. 35 St., New York, N.Y. 10016

Filed Oct. 16, 1980, Ser. No. 197,444

Int. Cl.³ A43B *13/40, 13/18, 7/14*

U.S. Cl. 36—44 **13 Claims**



1. An insole for use in a shoe comprising a sock lining layer corresponding generally to the shape of a shoe, a foam layer substantially the same size and shape as the sock lining layer, a backer layer substantially the same size and shape as the sock lining layer, means joining the periphery of said layers, means providing a slippage control between said sock lining layer and said foam layer, said slippage control means including stitching in the form of a closed loop wholly disposed at the location adapted to support a ball of a foot, said loop stitching having two extensions each extending from one end of said loop to said peripheral joining means at a location between the heel

end of the layers and said one end of said loop, said loop stitching and said extensions constituting one continuous and uninterrupted stitching.

4,367,600

GOLF SHOE WITH IMPROVED TRANSVERSE TRACTION

Henry D. Cross, III, Colt's Neck, N.J.; Charles C. Eaton, Jr.; John Larsen, both of Hingham, Mass., and Rob R. McGregor, Concord, Mass., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed May 27, 1980, Ser. No. 153,581
Int. Cl.³ A43B 5/00; A43D 9/00
U.S. Cl. 36—127 **26 Claims**

1. In a pair of golf shoes having sole and heel assemblies integrally attached to flexible shoe uppers; the improvement comprising:

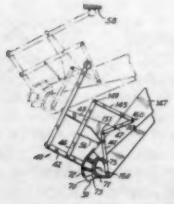
a continuous ground contacting plane formed by the lowermost surfaces of said sole and heel assemblies over the entire area thereof, each of said pair of shoes having a first and a second set of ground engaging spikes affixed to the lowermost surfaces of said assemblies, said first set of spikes attached along curved paths spaced adjacent to the leading side edges of each of said pair of assemblies as defined by the direction of a golf club swing, said paths extending from the central toe position of said shoes through the heel positions and having at least two spikes positioned in the instep region of said shoes along each of said paths, said second set of ground engaging spikes affixed to the lowermost surface of said assemblies along the trailing edge of said shoes in the toe region and in the heel region, said first set of spikes providing ground engaging frictional traction along the entire leading edges of said pair of shoes to anchor said shoes against lateral forces between said shoes and the ground during a golf club swing.

4,367,601

SEPARABLE MEANS FOR EXCLUDING OVERSIZED SLENDER OBJECTS

John P. Latimer, and John H. Hall, both of Newport News, Va., assignors to Deepsea Ventures, Inc., Gloucester Point, Va.

Filed Feb. 9, 1981, Ser. No. 232,862
Int. Cl.³ E02F 3/92
U.S. Cl. 37—57 **22 Claims**



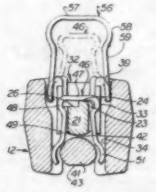
1. Screening means for screening long slender particles to prevent passage through a fluid-flow conduit, wherein the particles have their long dimension extending along the direction of fluid flow, the screening means comprising a conduit; two sets of a plurality of opposed pairs of corrugated surfaces; and moving means to move the two sets relative to each other, between a first position, where the two sets are interleaved and a second non-interleaved position: in the first position, the axes of the folds of the corrugated surfaces extend transversely to, and the corrugated surfaces are folded along, the direction of fluid flow through the conduit, such that the interleaved corrugated surfaces define a plurality of separate curved flow channels through the conduit portion; in the second position, at least one of the sets of corrugated surfaces is moved, so that the two sets are not interleaved; any material jammed between adjacent interleaved surfaces in the first position is thereby released in the second position.

4,367,602

LOCK AND KEY RETAINER FOR EXCAVATOR TOOTH

Gerald A. Petersen, 37 Sullivan Dr., Moraga, Calif. 94556

Filed Oct. 13, 1981, Ser. No. 310,472
Int. Cl.³ E02F 9/28
U.S. Cl. 37—142 A **9 Claims**



1. In combination, an excavating tooth having a distal portion having a cutting edge at one end and a first shoulder at its opposite end and a proximal portion having a reduced width portion and a second shoulder rearward of said reduced width portion; a holder having a distal end shaped to receive the thrust of said first shoulder as said tooth digs, said holder being formed with a recess extending inward from said distal end to receive said proximal portion of said tooth and an opening spaced rearward from said distal end and extending generally transverse to said recess and intersecting said recess, said opening having opposed side walls, a first retainer formed of resilient material and having a first connecting portion and a pair of initially outward diverging first legs, said first legs being slidable into said opening between outer and inner positions and when in the inner position being opposite said reduced width portion and forward of said second shoulder and a second retainer formed of resilient material and having a second connecting portion and a pair of initially outward diverging second legs, said second legs being wider apart than said first legs, said second retainer being slidable into said opening between outer and inner positions and when in the inner position being located between said first legs and said side walls and compressing said first legs into inward position, said first legs when in inward position restraining withdrawal of said tooth from said holder by interfering with outward movement of said second shoulder.

4,367,603

SNOW CASTER HAVING RING GEAR AND SPUR GEAR DRIVE MEANS

William J. Schlapman, Winneconne, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Sep. 28, 1981, Ser. No. 305,981
Int. Cl.³ E01H 5/09
U.S. Cl. 37—251 **10 Claims**

1. A snow caster comprising:

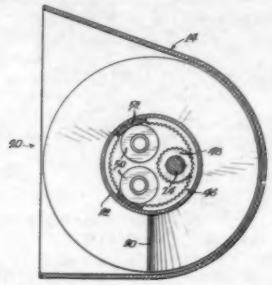
(a) an elongated housing having ends and an opening extend-

ing substantially between the ends defining the front of the housing, the housing also having a discharge spout positioned rearwardly of the front;

(b) a drive shaft rotatably mounted transversely within the housing;

(c) a fan mounted on the drive shaft adjacent the discharge spout to propel material such as snow through the discharge spout;

(d) an auger unit including an auger blade mounted on an auger tube, the auger unit rotatably mounted within the housing with the drive shaft extending into the auger tube,



the auger unit adapted to propel material such as snow toward the fan as the auger unit is rotated; and

(e) speed reduction means for operably interconnecting the drive shaft and the auger unit such that the auger unit rotates at a slower speed with respect to the fan, the speed reduction means including a ring gear mounted coaxially on the auger unit, an internal spur gear mounted on the drive shaft engaging the ring gear, and an idler roller rotatably mounted on the housing to coact with the inside of the auger tube to align the auger unit and maintain the ring and spur gears in mesh.

4,367,604

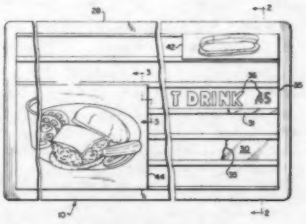
MENU BOARD

Stephen T. Porter, II, Potomac, and Paul G. Gaiser, Gaithersburg, both of Md., assignors to Marriott Corporation, Washington, D.C.

Filed Mar. 27, 1981, Ser. No. 248,343

Int. Cl.³ G09F *21/04*

U.S. Cl. 40—564 **9 Claims**



1. An illuminated sign structure, comprising

a housing having an opaque frame and a translucent front panel within said frame;

a source of light mounted in said housing;

a plurality of substantially parallel ribs mounted on the outer surface of said front panel and extending across said panel in equally spaced relationship, said ribs each having, in cross section, a stem portion protruding outwardly from said panel and lateral flanges extending in opposite directions from said stem portion, said flanges being spaced from said outer surface and having opaque front surfaces;

a plurality of elongated strips each having a width no greater than the distance between said stem portions of adjacent ones of said ribs and a thickness no greater than the spacing between said outer surface and said flanges such that each of said strips can be inserted between adjacent ones of said ribs, at least some of said strips having opaque and translucent regions defining alphanumeric characters; and

a plurality of picture display units, each said unit having end walls, upper and lower spaced, generally parallel side walls, and a front panel, the rear of each said unit being substantially open, said front panel of each unit having translucent portions forming a pictorial representation of an object, each of said upper and lower side walls having means at the rear edges thereof defining outwardly extending hook members shaped to engage flanges which extend toward each other on two of said ribs, said side walls of said picture display units being spaced apart by different distances, each said distance being substantially equal to an integral multiple of the center-to-center distance between said ribs;

whereby a plurality of said strips and picture display units can be mounted on said frame front panel to occupy substantially all of the area within said frame to permit passage of light only through said translucent regions of said strips and translucent portions of said display units.

4,367,605

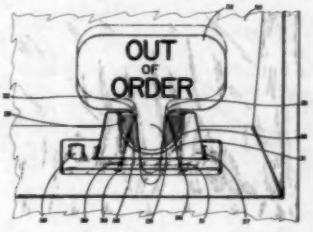
SIGN FOR COIN-OPERATED MACHINE

Hampton A. Clifton, 4307 El Carnal Way, Las Vegas, Nev. 89121

Filed Mar. 23, 1981, Ser. No. 247,864

Int. Cl.³ G09F *7/00*

U.S. Cl. 40—584 **4 Claims**



1. A sign for indicating the inoperative condition of a coin-operated apparatus having a coin slot for receiving coins comprising display means, a flat guide member adapted to fit into the coin slot, and fastening means for removably attaching the sign of the coin-operated apparatus comprising a pair of legs biased outwardly from the guide means.

4,367,606

MOUNT FOR RIFLE TELESCOPE SIGHT

Daniel L. Bechtel, P.O. Box 11281, Fort Worth, Tex. 76109

Filed Oct. 6, 1980, Ser. No. 178,782

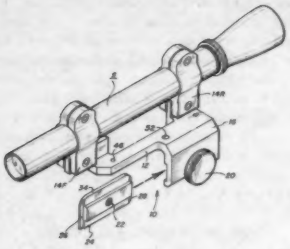
Int. Cl.³ F41G *1/38*

U.S. Cl. 42—1 ST **15 Claims**

1. Apparatus for mounting a scope on a rifle, comprising:

(a) a removable plate having a configuration which permits it to be inserted into a prepared recess along the side of the rifle, and said plate having front and rear edges which have thicknesses which are appropriately sized so as to be inserted into grooves which coincide generally with the front and rear boundaries of said prepared recess, and the plate being configured to abut a rigid portion of the rifle so

that the plate has a limitation on its upward movement, and said plate having threads which are accessible from the outer surface of the plate; and



(b) structural means for selectively mating with said plate and including a complementary threaded member for engaging the threads on said plate, and further including support means for holding a scope so that it is essentially parallel to the bore of the rifle.

4,367,607

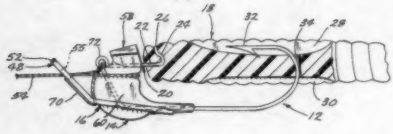
WEEDLESS, CHANGEABLE PLASTIC LURE

Dean L. R. Hedman, 4410 NW. 61st St., Des Moines, Iowa 50322

Continuation-in-part of Ser. No. 888,853, Mar. 22, 1978, Pat. No. 4,219,956. This application Aug. 29, 1980, Ser. No. 182,686

Int. Cl.³ A01K *85/00, 83/06*

U.S. Cl. 43—42.1 17 Claims



1. A weedless fish lure comprising,

a hook means having a shank portion with forward and rearward ends, a pointed arcuate hook portion with a rearwardly disposed barb element connected to the pointed end of said hook portion and the other end of said hook portion connected to said rearward end of said shank portion and an eyelet connected to said forward end of said shank portion,

a pliable body member having forward and rearward ends with a middle portion therebetween, and

retainer means rigidly connected to said shank portion being in lateral spaced relation to said shank portion and including a substantially straight portion operatively extending rearwardly from the forward end of said shank portion into the forward end of said body member along its longitudinal center axis and thence laterally outwardly to detachably secure said forward end of said body member to said shank portion with said hook portion extending into said middle portion of said body member, said straight portion of said retainer means merging into a return bend portion terminating in an end laterally spaced from said straight portion to provide a substantial hook-like means for holding engagement with said pliable member.

4,367,608

BUBBLES EMITTING TOY VEHICLE

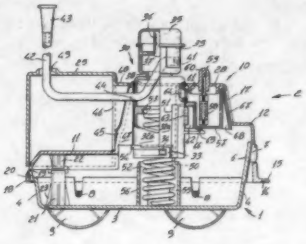
Athos Melotti, Via dello Spalto, 3, Bologna, Italy

Filed Jun. 29, 1981, Ser. No. 278,221

Claims priority, application Italy, Jul. 24, 1980, 4913/80[U]

Int. Cl.³ A63H *33/28*

U.S. Cl. 46—7 2 Claims



1. A toy vehicle emitting bubbles of the type of soap bubbles, comprising a wheel-mounted frame, an opening formed in said frame, a blowring carried inside said frame and facing said opening, a puppet guided for sliding movement in a vertical direction in said frame, a hole formed in said puppet and connected with air blowing means, spring means urging said puppet in a raised position, a reservoir containing a liquid for forming bubbles fixed onto said puppet and engaged by said blowring when the puppet is in said raised position, said air blowing means being effective when the puppet is depressed in a lowered position against the bias of said spring means and the blowring is aligned with said hole, and a plate rigid with said puppet for covering said opening, said opening configuring a front window of the vehicle and said plate forming the windshield of said window.

4,367,609

USE OF MICROORGANISMS IN CONJUNCTION WITH SEEDS

John M. Lloyd, Richmond, New Zealand, assignor to Coated Seed Limited, Christchurch, New Zealand

Filed Jul. 14, 1981, Ser. No. 283,338

Claims priority, application New Zealand, Jul. 28, 1980, 194466

Int. Cl.³ A01C *1/06*

U.S. Cl. 47—57.6 37 Claims

1. In a method of sowing seeds in which a micro-organism is present for the purpose of promoting a desired effect on the seed or in conjunction with the seed, the improvement comprising using a water soluble polyvinyl-pyrrolidone to promote the survival of the micro-organism.

4,367,610

DOOR OPENING AND CLOSING MECHANISM

David J. Goode, Great Missenden, England, assignor to John Mowlem & Company Limited, Brentford, England

Filed Apr. 4, 1980, Ser. No. 137,192

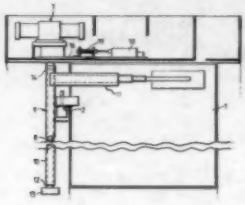
Claims priority, application United Kingdom, Apr. 10, 1979, 7912499

Int. Cl.³ E05F *11/00*

U.S. Cl. 49—336 6 Claims

1. An opening and closing mechanism for a blast resistant pivoted door, said mechanism including a rotary actuator; an elongated torque tube assembly having two operative ends, first means connecting one end of said torque tube assembly with said rotary actuator; second means connecting the other end of said torque tube assembly to a blast resistant door, rotary movement generated by said rotary actuator being transmitted through said torque tube assembly via said first and second connecting means to open and close said door, and

means enabling said torque tube assembly to be strained torsionally by rotating one end thereof with respect to said other



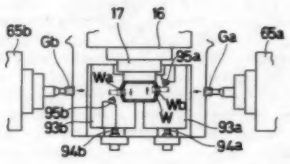
end in response to a blast rebound, whereby said torque tube assembly absorbs said rebound and helps prevent damage both to said actuator and to said door.

4,367,611

CAGE SLOT GRINDING MACHINE

Makoto Kikuchi, and Akiyoshi Kobayashi, both of Kariya, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 19, 1980, Ser. No. 218,211
Claims priority, application Japan, Dec. 19, 1979, 54-165212
Int. Cl.³ B24B *5/36*
U.S. Cl. 51—41 **5 Claims**



1. A cage slot grinding machine for grinding a plurality of cage slots formed on a circumferential surface of a cage member, comprising:

a bed;

a work head provided on said bed;

a work spindle rotatably carried on said work head and adapted to hold said cage member at one end thereof;

first and second support means slidably mounted on said bed for movement in first and second directions, said directions being respectively perpendicular and parallel to the axis of said work spindle, said first and second support means respectively carrying first and second grinding wheels each rotatable about an axis perpendicular to the axis of said work spindle;

a spindle indexing device connected to said work spindle for angularly indexing said work spindle so as to successively bring said cage slots, two at a time, into alignment respectively with said first and second grinding wheels;

traverse feed means connected with said first and second support means for moving the same in said first direction, but in opposite senses, so as to extend said first and second grinding wheels respectively into said two of said cage slots brought into alignment therewith;

infeed means connected with said first and second support means for moving the same in said second direction but in opposite senses so as to infeed said first and second grinding wheels respectively toward an edge on one side of one of said two cage slots and an edge on the other side of the other of said two cage slots; and

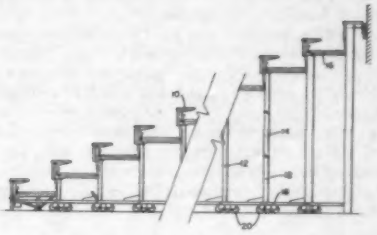
rotational oscillatory means connected with said work spindle for rotationally oscillating the same along a predetermined angular distance.

4,367,612

COMPOSITE SUPPORTING STRUCTURE

David L. Sutter, Kennebunkport, Me., assignor to Hussey Manufacturing Company, North Berwick, Me.

Filed Apr. 14, 1980, Ser. No. 139,783
Int. Cl.³ E04H *3/12*
U.S. Cl. 52—9 **1 Claim**



1. A composite telescoping support structure comprising:

at least a first open rectangular load supporting frame having a frontwardly facing central open area, said open centralarea forming a cavity of substantially the same shape as said first frame;

at least a second open rectangular supporting frame having a shape substantially the same as but slightly smaller than the central open area of said first frame;

said second frame fitting within the central open area of said first frame in telescoping relation;

means for bracing said first frame against lateral swaying comprising a first unsupported diagonally mounted column flush with the rear of said first frame, means for bracing said second frame against lateral swaying comprising a second diagonally mounted column flush with the rear of said second frame,

said columns each comprising two substantially equal flanges set at an angle between about 80° to 45°,

means including rollers for moving said second frame from a stowed position within said first frame to a use position adjacent to but in front of said first frame, and said second diagonally mounted column connected to said second frame in substantially parallel relation to said first column;

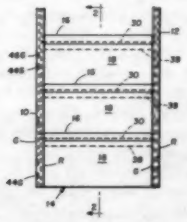
said first and second columns in abutting and partially overlapping relation when said frames are in the stowed position.

4,367,613

STAIRS AND METHOD OF MAKING THE SAME

Robert D. Strub, 817 S. Capitol, Iowa City, Iowa 52240

Filed Feb. 20, 1981, Ser. No. 236,036
Int. Cl.³ E04F *11/00*
U.S. Cl. 52—188 **8 Claims**



1. A construction for wooden stairs to span the distance between a lower level and an upper level, said stairs compris-

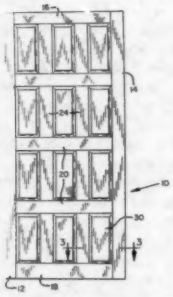
ing longitudinally extending spaced-apart stringers each having a first side and a second side opposite thereto, said stringers extending from the lower level to the upper level, a plurality of treads extending between said stringers in longitudinally spaced-apart horizontal planes according to a predetermined rise, a plurality of risers alternating with said treads and extending between said stringers in longitudinally spaced-apart vertical planes according to a predetermined run, spaced-apart grooves formed in the first side of each of said stringers to receive the ends of said treads and position them according to a first predetermined rise when said stairs are assembled with said first sides of said stringers facing each other, spaced-apart grooves formed in the second side of each of said stringers to receive the ends of said treads and position them according to a second predetermined rise when said stairs are assembled with said second sides of said stringers facing each other, and means to hold said stringers, treads and risers in assembled condition to form a completed stairs with a predetermined rise and run depending upon the selected position of said stringers.

4,367,614

FIRE ENDURANCE DOOR

Charles H. Warwick, Lake Oswego, Oreg., assignor to Tyre Mfg. Co., Inc., Alhambra, Calif.

Filed Oct. 14, 1980, Ser. No. 196,217
Int. Cl.³ E06B *3/70*
U.S. Cl. 52—455 **6 Claims**



1. In a door, a first set of laterally spaced members extending in the direction of the height of the door and a second set of laterally spaced members extending in the direction of the width of the door spanning the space between the first set of members and connecting with the first set of members,

said first and second set of members having inwardly facing side edges defining a rectangular space bounded by the members and said inwardly facing side edges having channels extending therealong recessed thereinto,

a rectangular panel mounted within said space having elongate edge margins extending along the perimeter thereof with said edge margins seated within said channels,

said edge margins of the panel having grooves extending their lengths and the bases of said channels having grooves extending along their lengths which face the grooves in said edge margins,

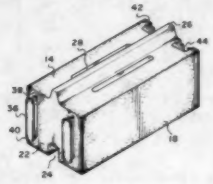
and strips of fire-resistant material having one set of margins fitted within the grooves in the bases of said channels and an opposite set of margins fitted within the grooves in said edge margins of the panels.

4,367,615

REINFORCED INTERLOCKING BUILDING BLOCK

Louis Feldman, 1900 S. Palm Canyon Dr., Palm Springs, Calif. 92262

Filed Sep. 9, 1980, Ser. No. 185,447
Int. Cl.³ E04C *1/10*
U.S. Cl. 52—583 **4 Claims**



1. An interlocking reinforced building block comprising:

a substantially rectangularly shaped block comprised essentially of cementitious material;

at least one metal reinforcing member embedded within said cementitious material, said reinforcing member extending substantially the entire height and the entire length of said block of cementitious material;

one end of said reinforcing member extending past one end of said block and terminating in an elongated, headed tongue of substantially T-cross section, said tongue extending substantially the entire height of said block, the other end of said reinforcing member terminating in an elongated groove of substantially rectangular cross section, said groove extending substantially the entire height of said block and including a slotted opening running substantially vertically adjacent the other end of said block, said groove having an opening at the top and bottom thereof, the opening at the top being smaller than the cross section of said groove and being only slightly larger than is needed to allow the tongue of a similarly constructed block to pass vertically through, and

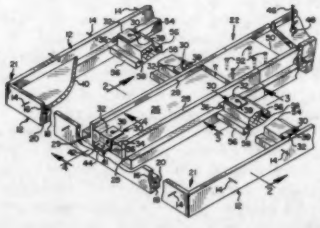
said tongue and groove being constructed so that the tongue of one block can be slid vertically into the groove of a similarly constructed block and wherein the two blocks may have limited longitudinal and pivotal movement with respect to each other while said tongue and groove are engaged.

4,367,616

WOODEN BEAM SUSPENDED CEILING ASSEMBLY

Ronald D. Pearson, 22015 - 146th Ave. East, Graham, Wash. 98338

Filed Apr. 25, 1980, Ser. No. 144,177
Int. Cl.³ E04B *5/52*; E04F *19/06*
U.S. Cl. 52—664 **13 Claims**



1. A support structure for supporting a plurality of ceiling panels as a suspended ceiling assembly over an area defined by perimeter walls, the support structure comprising:

(a) an elongated wall hanger attachable to the walls of the defined area and having an upwardly facing horizontal

support surface provided with a recess therein terminating above the bottom side of the wall hanger and extending the full length thereof,

(b) at least one main beam of substantial rigidity arranged to extend freely between opposite walls inwardly of the wall hanger, the main beam having a cross section including a pair of horizontal extensions, one on each side, each having an upwardly facing horizontal support surface provided with a recess therein terminating above the bottom side of its horizontal extensions and extending the full length thereof,

(c) main beam support means comprising longitudinal extensions on the opposite ends of each main beam arranged to rest on the horizontal support surfaces of the wall hanger on opposite walls for supporting the main beam therebetween for removal vertically upward therefrom, each longitudinal extension including a downwardly extending tongue configured to fit in the recess in the wall hanger,

(d) a plurality of cross beams each arranged to extend freely between opposed pairs of said horizontal support surfaces, each cross beam having a cross section including a pair of horizontal extensions, one on each side, each having an upwardly facing horizontal support surface, and

(e) cross beam support means comprising longitudinal extensions on the opposite ends of each cross beam arranged to rest on opposed pairs of the horizontal support surfaces for supporting the cross beam therebetween for removal vertically upward therefrom, each longitudinal extension including a downwardly extending tongue configured to fit in a recess in the wall hanger or main beam,

(f) the main and cross beam support means being arranged to dispose the horizontal support surfaces of the wall hanger and main and cross beams in a common plane to form an upwardly facing support for the edges of ceiling panels.

4,367,617

GUIDE DEVICE FOR GUIDING WRAPPING PAPER IN COIN WRAPPING MACHINE

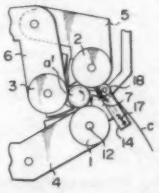
Yorizo Miyazaki, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Mar. 10, 1981, Ser. No. 242,328

Claims priority, application Japan, Apr. 2, 1980, 55-44281[U]

Int. Cl.³ B65B *11/04*

U.S. Cl. 53—212 **3 Claims**



1. A coin wrapping machine for wrapping coins with a web of wrapping sheet, the machine having coin wrapping rollers which are adapted to move toward each other to take a first position where the coin wrapping rollers are engaged with the coins for a wrapping operation and to move away from each other to take a second position where the coin wrapping rollers are retracted, said machine further comprising:

a main guide plate mounted on one of the coin wrapping rollers for rotation about the axis thereof;

a subsidiary guide plate slidably mounted on the main guide plate for guiding said web between said wrapping rollers and coins; and

biassing means for biassing the subsidiary guide plate to project toward another one of the coin wrapping rollers when the coin wrapping rollers take the first position, said subsidiary guide plate being provided with at least one abutting roller to abut against the periphery of the another one of the coin wrapping rollers when the coin wrapping rollers take the first position.

4,367,618

VARIABLE CAPACITY BUFFER STORAGE CONVEYOR FOR CIGARETTE PACKAGING APPARATUS

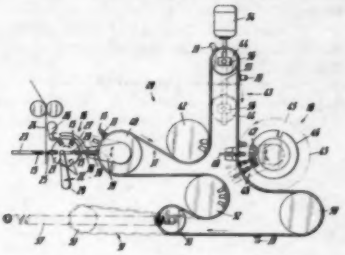
Heinz Focke, Moorstrasse 64, 309, Verden/Aller, Fed. Rep. of Germany

Continuation of Ser. No. 48,117, Jun. 13, 1979, abandoned, which is a continuation of Ser. No. 929,051, Jul. 28, 1978, abandoned, which is a continuation of Ser. No. 550,797, Feb. 18, 1975, abandoned. This application Sep. 18, 1980, Ser. No. 188,418

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1974, 2407580

Int. Cl.³ B65B *11/30*

U.S. Cl. 53—234 **8 Claims**



1. In a cigarette packaging apparatus including a first unit for wrapping groups of cigarettes in an inner blank of tin-foil or the like to form individual blocks wherein flaps of the blank are folded but not glued, and a second unit for enclosing the blocks in an outer box of paper or the like wherein flaps of a box blank are glued together, and wherein the second unit is more susceptible to operational breakdowns and malfunctions than the first unit, the improvement characterized by:

a variable capacity buffer storage device operatively disposed in series between the first and second units to serially receive blocks from the first unit and deliver them to the second unit, said storage device comprising:

(a) an endless belt conveyor,

(b) a plurality of fixed pulleys over which the conveyor is guided,

(c) at least two movable pulleys over which the conveyor is guided to define a variable length storage loop and a variable length takeup loop in the conveyor,

(d) a plurality of generally rectangular compartments serially mounted on the conveyor for individually receiving a foil-wrapped cigarette block,

(e) each compartment including a bottom wall having a slot formed therein, and a plurality of upstanding side walls defining an entrance opening with the spacing between the walls and their dimensions being configured to closely accommodate cigarette blocks to prevent the unfolding of the foil wrapper flaps during storage and transport on the conveyor.

(f) means for moving one of the movable pulleys to decrease the length of the storage loop in response to a breakdown in the second unit

wherein said first unit comprises a rotating member (21) having radially outwardly open compartments (22) for receiving cigarette groups (15) with a tin-foil blank member partially folded thereabout, folding means for further partially folding said tin-foil blank about said cigarette groups to form cigarette blocks, means for radially transferring said blocks from said rotating member into receiving means, means for accelerating said receiving means to

the speed of said endless belt conveyor, and means for laterally transferring said blocks from said receiving and accelerating means into the conveyor compartments with an end of each blank having no flaps or folds disposed in an outwardly facing compartment opening, and

wherein said second unit comprises means for individually ejecting the cigarette blocks from the conveyor compartments and delivering them to box-containing compartments of a rotating receiving means, said ejecting means including a reciprocating member mounted on a rotatable element, means for accelerating said element to the speed of said conveyor, and means for reciprocating said member to extend through said slot to eject said cigarette blocks from said conveyor compartments.

4,367,619

DEVICE FOR STACKING SLIDE FRAMES INTO A CONTAINER

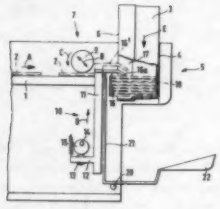
Johannes Lorsch, An der Bleiche 49, D-4172 Straelen, Fed. Rep. of Germany

Filed Aug. 8, 1980, Ser. No. 177,444

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1979, 2932286

Int. Cl.³ B65B *5/10*

U.S. Cl. 53—245 **7 Claims**



1. A device for stacking flat slide frames and the like into a container, comprising conveyor means for conveying the frames consecutively into the container inserted in a receiver; means operatively positioned to maintain a selected vertical container position in said receiver corresponding to the elevational position of slide frames moving along said conveyor; a lifting mechanism timed synchronously with said conveyor to produce a pressing force that exceeds a braking force of said container position means for maintaining stacked slides below the elevational position of the conveyor means, a pusher extendable into a stack receiving area of said container and being vertically movable a predetermined height in the plane of moement of said containers to exert the pressing force, said pusher having movement reversal points located on opposite sides of an area of said receiver and said container which operatively coact with the said conveyor in the direction of movement of said slide frames; and means for accelerating slide frames into the container, including an accelerating roll operatively positioned above the conveyor path, said accelerating roll being adjustable relative to the conveyor path to contact and accelerate slide frames and the like of varying thicknesses.

4,367,620

VALVED BAG SEALING

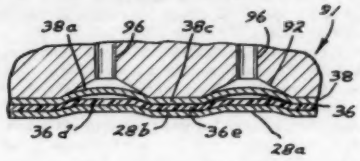
Harold K. Fox, Minneapolis, Minn., assignor to Bemis Company, Inc., Minneapolis, Minn.

Filed Dec. 15, 1980, Ser. No. 216,446

Int. Cl.³ B65B *7/06, 51/10*

U.S. Cl. 53—479 **10 Claims**

1. A method of forming a sealed valve bag top closure on a filled valve bag that in an upright condition has juxtaposed bag top closure wall portions including at least one relatively porous upper wall portion and a valve member adherable to at least one upper wall portion through the application of heat and cooling to form a valve closure, said valve member extending below and along at least part of the lower surface of said at least one wall portion, comprising heating a heater vacuum head, applying a vacuum through the heated vacuum head through the at least one upper wall portion after the bag is filled to draw at least part of the valve member against the adjacent part of the at least one upper wall portion and the at



least one upper wall portion against the head, and heat said parts sufficiently that after cooling the said parts adhere to one another to form a valve closure seal, then discontinuing the application of the vacuum through the vacuum head, and thence moving the vacuum head away from the bag and allowing the valve member and the at least one upper wall portion to cool to form the sealed valve closure.

4,367,621

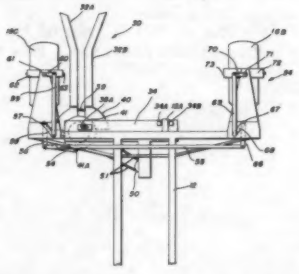
CROP HARVESTER INCLUDING A QUICKLY ADJUSTABLE SEMI-FLOATING, SELF-STEERING CUTTER HEAD

Larry D. Swetnam; James H. Casada, and Linus R. Walton, all of Lexington, Ky., assignors to The University of Kentucky Research Foundation, Lexington, Ky.

Filed Apr. 9, 1981, Ser. No. 252,315

Int. Cl.³ A01D *45/16, 55/00, 91/04*

U.S. Cl. 56—10.2 **25 Claims**



1. A harvesting aid for harvesting row crops comprising:

a support frame mounted on a plurality of ground engaging wheels;

a motor means operatively connected to at least one ground engaging wheel to impel the support frame along the ground surface;

steering linkage means connected to at least one ground engaging wheel to steer the support frame along the ground surface;

a self-steering cutter adjustably mounted on the support frame and operatively connected to said steering linkage, said self-steering cutter including a top steering plate rotatably mounted thereto and a cutter blade for severing row crops as the harvesting aid is steered along a specific predetermined row of row crops;

said self-steering cutter including outwardly projecting guidance sensors which are attached to said top steering plate, said guidance sensors being positioned to engage said specific predetermined row of row crops to selec-

tively impart movement to the steering linkage means to steer the harvesting aid along the specific predetermined row of crops and being mounted for limited vertical movement; and

adjustment means for adjusting said self-steering cutter relative to said support frame to adjust the height of said self-steering cutter above ground level enabling severing of the row crops in close proximity to the ground surface;

said self-steering cutter and said adjustment means being constructed as an integral unit to enable steering of the harvesting aid along the specific predetermined row of row crops while severing the row crops in close proximity to the ground surface.

4,367,622

PICK-UP DEVICE

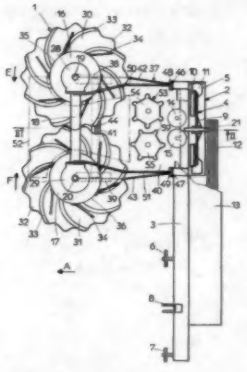
Jerome Aron, Bouxwiller; Michel Quirin, Wasselonne, and Albert Wattron, Marmoutier, all of France, assignors to Belrecolt S.A., Marmoutier, France

Filed Apr. 13, 1981, Ser. No. 253,220

Claims priority, application France, Apr. 15, 1980, 80 08668; Jul. 22, 1980, 80 16400

Int. Cl.³ A01D *43/00, 65/00, 89/00*

U.S. Cl. 56—364 **13 Claims**



1. An arrangement for gathering forage situated at the level of the ground, particularly cut herbage,

comprising, in combination,

a support movable in an advancing direction on the ground;

at least one carrier mounted on said support for rotation about an upright axis which is slightly inclined in the advancing direction with respect to the vertical;

rotating means for rotating said carrier about said axis;

a flexible deformable skirt mounted near the lower portion of said carrier for rotation therewith and adapted to make contact with the forage on the ground at its forward section to gather the forage;

receiving means arranged near the rear of said carrier operable for receiving the gathered forage, and

a plate extending from below said skirt rearwardly to said receiving means for guiding the forage gathered by said skirt towards said receiving means.

4,367,623

PIECING UP A FRICTION SPINNING APPARATUS

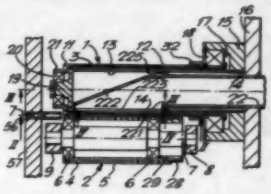
Alan Parker, 7 Darvel Close, Breightmet, Bolton, Lancashire; Peter J. Dickinson, 30 Narcissus Ave., Helmshore, Rossendale, Lancashire; Douglas O. Clough, 26 Parkwood Dr., Rawtenstall, Rossendale, Lancashire, and William M. Farnhill, 335 Colne Rd., Burnley, Lancashire, all of England

Filed Feb. 17, 1981, Ser. No. 235,332

Claims priority, application United Kingdom, Feb. 16, 1980, 8005322

Int. Cl.³ D01H *15/02*

U.S. Cl. 57—263 **21 Claims**



1. A method of starting spinning an open-end spinning apparatus including at least one surface, fibre feed means for feeding fibres onto the surface at a yarn formation area, means for applying a suction through the surface at a yarn formation area, means for moving the surface past the yarn formation area to twist the fibres deposited thereon the form a yarn, means for withdrawing the yarn transversely to the direction of motion of the surface, and means for packaging the withdrawn yarn,

the method comprising, taking the yarn end from the package and withdrawing it such that the end portion of the yarn extends to a predetermined length, placing the end portion of the surface at the yarn formation area, restarting the fibre feed means and restarting the withdrawal of the yarn from the yarn formation area,

characterized in that the end portion is first moved to a position such that it lies adjacent the yarn formation area and in such a condition that it is free from the influence of the suction and then the end portion is brought under the influence of the suction such that it is drawn to lie on the yarn formation area.

12. Apparatus for open-end spinning yarn comprising at least one surface, fibre feed means for feeding fibres onto the surface at a yarn formation area, means for applying a suction through the surface at the yarn formation area drive means for moving the surface past the yarn formation area to twist the fibres deposited thereon to form a yarn, means for withdrawing the yarn transversely to the direction of motion of the surface and means for packaging the withdrawn yarn,

characterized in that for starting spinning on the apparatus there are provided means for moving an end portion of yarn withdrawn from the package to a position adjacent the yarn formation area, the end moving means and suction means being so arranged that in said position the end portion is free from the influence of the suction means, and means for bringing the end portion under the influence of the suction means such that it is drawn to lie on the yarn formation area.

4,367,624

CONTROL SYSTEM FOR HYDRAULIC ACTUATOR

Yasuhiro Ogata, and Norishige Mutou, both of Hirakata, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Feb. 15, 1980, Ser. No. 121,735

Claims priority, application Japan, Feb. 20, 1979, 54-19754[U]

Int. Cl.³ F15B *11/16*

U.S. Cl. 60—484 **3 Claims**

1. A control system for controlling a hydraulic actuator

during full stroke operations and inching operations, said control system comprising:

an engine;

a first hydraulic pump with a large displacement capacity driven by said engine;

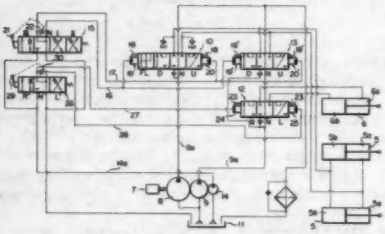
a second hydraulic pump with a small displacement capacity driven by said engine;

a pilot pump driven by said engine;

first pilot operated control valve means connected at the input side thereof to said first pump, the output side thereof being selectively connected to said hydraulic actuator and a drain;

second pilot operated control valve means connected at the input side thereof to said second pump, the output side thereof being selectively connected to said hydraulic actuator and a drain wherein said second pilot operated control valve means is actuated by a lower pilot pressure than said first pilot operated control valve means; and

third control valve means for pilot pressure connected at the input side thereof to said pilot pump, the output side



thereof being connected to said first and second pilot operated control valve means for controlling the actuation thereof, such that, during full stroke operations, said first and second pilot operated control valve means are actuated by said third control valve means such that said hydraulic actuator is operated by hydraulic fluid from said first and second hydraulic pumps and during inching operations, only said second pilot operated control valve means is operated by said third control valve means such that said hydraulic actuator is operated by hydraulic fluid from only said second hydraulic pump, wherein each of said first and second pilot operated control valve means has two pilot ports formed therein one of which is connected to said third control valve means for pilot pressure through a first conduit, the other port being connected to said third control valve means for pilot pressure through a second conduit and wherein adjustable restrictor means is provided between said first and second conduits, said restrictor means being interlocked with lever means for operating said third control valve means for pilot pressure.

4,367,625

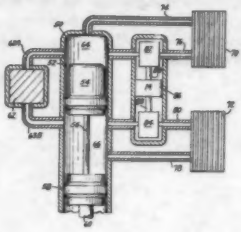
STIRLING ENGINE WITH PARALLEL FLOW HEAT EXCHANGERS

Nicholas G. Vitale, Schenectady, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Mar. 23, 1981, Ser. No. 246,879
Int. Cl.³ F02G 1/04
U.S. Cl. 60—517 **11 Claims**

1. A Stirling engine having at least one cylinder having a first piston mounted for reciprocation therein; an expansion space in said cylinder on one side of said piston; a regenerator having one side communicating with said expansion space; a compression space communicating with the other side of said regenerator; a second piston mounted for reciprocation in a second cylinder and communicating with said compression space; a gas heater in communication with said expansion space, and a gas cooler in communication with said compression space; wherein the improvement comprises:

a first circuit including a first set of parallel gas flow conduits connecting said gas heater to said expansion space, and first means for circulating working gas through said heater, through one of said conduits on one set, through said expansion space, through the other of said conduits on said one set, and back to said heater;



a second circuit including a second set of parallel gas flow conduits connecting said gas cooler to said compression space, and second means for circulating working gas through said cooler, through one of said conduits on the other set, through said compression space, through the other conduit on said other set, and back to said cooler;

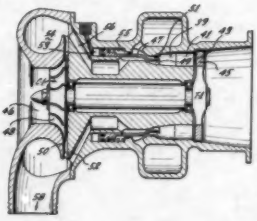
whereby the thermodynamic process in each space tends to be isothermal and the critical length phenomenon is alleviated for improved cycle efficiency.

4,367,626

TURBOCHARGER SYSTEMS

Everett H. Schwartzman, 2751 Toledo St., Torrance, Calif. 90503

Filed Jul. 16, 1979, Ser. No. 57,563
Int. Cl.³ F02B 37/00
U.S. Cl. 60—606 **16 Claims**



1. A turbocharger system for a combustion engine comprising:

a compressor having an ambient air inlet and a compressed air outlet,

a turbine having an inlet for driving fluid and an outlet,

ejector mixing means having a first and second inlet and an outlet, the outlet of said ejector mixing means being connected to the inlet of said turbine,

means connected to receive the compressed air from the outlet of said compressor and for flowing one portion thereof to the combustion engine and another portion thereof to said first inlet of said ejector mixing means,

means to flow exhaust gas from the combustion engine to said second inlet of said ejector mixing means,

said ejector mixing means including ejector nozzle means cooperating with said first and second inlets whereby the engine exhaust gas is admixed with the other portion of the compressor output in said nozzle means to form a

turbine drive fluid which flows out of said ejector mixing means outlet; a said ejector nozzle means being movable with respect to said first and second inlets and including a primary nozzle and a secondary nozzle and wherein the area of one is increased as the area of the other is decreased, and

means connecting said turbine to drive said compressor.

4,367,627

SYSTEMS FOR UTILIZING THE ENERGY OF A MOVING AIR CURRENT

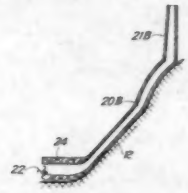
Gisberto Pretini, 3, Via Macerata, S. Frediano A Settimo, Pisa, Italy

Filed Jun. 30, 1980, Ser. No. 164,574

Claims priority, application Italy, Jul. 6, 1979, 45217 A/79; Jul. 12, 1979, 45219 A/79

Int. Cl.³ F03G 7/02

U.S. Cl. 60—641.12 **1 Claim**



1. An energy utilization system comprising:

a plurality of chimneys arranged side by side in a row, said chimneys extending upwardly along and conforming to a natural hilly slope, said row lying across the slope;

said chimneys each having a bottom portion extending substantially horizontally and having a lower inlet mouth;

said chimneys each including a top portion extending substantially vertical, each top portion having a substantially horizontally lined outlet mouth for inducing an air current into each lower inlet mouth and through said chimneys to each upper outlet mouth respectively;

means on said chimney for absorbing external heat for increasing a temperature of the air current and thus increasing the air current in said chimneys;

a single engine mounted on said chimneys at said bottom portions thereof and in a path of the air current;

said engine comprising a rotor mounted for rotation about a horizontal axis and including a plurality of radially extending blades each being concave in a direction opposite the air current adjacent the tip of each inlet mouth; and

a deflector upstream of the air current positioned adjacent a bottom of each inlet mouth and in front of a bottom portion of said rotor whereby the air current is concentrated at a top of said rotor to rotate said rotor and drive said engine.

4,367,628

LOW CHEMICAL CONCENTRATING STEAM GENERATING CYCLE

James D. Mangus, Greensburg, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 27, 1981, Ser. No. 238,774

Int. Cl.³ F01D 17/00

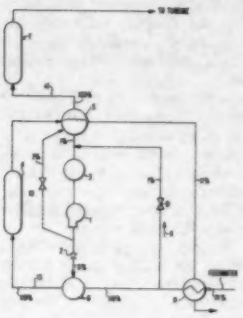
U.S. Cl. 60—657 **1 Claim**

1. A steam cycle for the generation of steam in a power generation station which comprises:

A. an evaporator;

B. a steam drum-separator in fluid contact with said evaporator;

C. a circulation pump disposed to remove a portion of fluid flow from said steam drum-separator and pump said portion back through said evaporator to said separator through a first flow path, operation of said circulation pump thereby constituting a recirculation mode of operation for said steam cycle and non-operation of said circulation pump constituting a closed mode of operation of said steam cycle;



and further comprising a second flow path allowing controlled flow from the discharge of said circulation pump directly to the steam separator without passing through said evaporator.

4,367,629

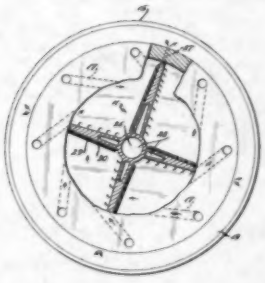
RANKINE CYCLE ENGINE

Gordon L. Cann, P.O. Box 279, Laguna Beach, Calif. 92652

Filed Oct. 7, 1980, Ser. No. 194,918

Int. Cl.³ F01K 9/00, 11/04

U.S. Cl. 60—669 **17 Claims**



1. A rotary Rankine cycle engine comprising:

(a) a rotor having cooling passageways therein, the rotor having a plurality of blades thereon and being rotatable about a center axis;

(b) a stator consisting of a stationary housing having a center axis and a perimeter, the center axis of the stationary housing being coincidental with the center axis of the stationary housing being coincidental the with center axis of the rotor;

(c) a rotor housing area within the stator, the rotor housing area containing the rotor;

(d) a duct housing integral with the stator and located within the stator adjacent the rotor housing area;

(e) an outer chamber, the outer chamber consisting of a fluid space within the stator extending from the outer perimeter to the duct housing;

(f) a heat-receiving portion on the perimeter of the stator, the heat-receiving portion conducting heat from without the stator to within the stator, thereby permitting the outer chamber to act as a boiler section;

(g) fluid ducts within the duct housing, the fluid ducts permitting fluid to flow from the outer chamber to the rotor housing area;

(h) rotor axis bearings, the rotor axis bearings supporting the rotor for rotation about said coincidental axes;

(i) a fluid impingement surface on at least one side of each blade, the fluid impingement surfaces operable to receive fluid from the fluid ducts, thereby acting as working surfaces to convert kinetic energy of fluid received from said ducts to rotational mechanical energy output from the rotor;

(j) a condensation surface on each blade, so that the blade is operable to communicate heat from said condensation surface to said cooling fluid passageways,

(k) baffle means on the condensation surface, the baffle means communicating with an outlet end and arranged so that, with the rotor rotating, condensate on the condensation surface is directed by centrifugal force radially outward toward the outer chamber.

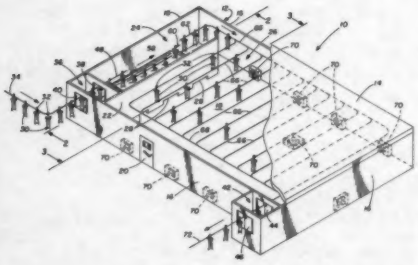
wherein, when heat is applied to the heat-receiving portion of the stator and cooling fluid is provided to the cooling passageways of the rotor, a working fluid may be heated in the outer chamber, expand in the fluid ducts and rotor housing area, impinge against the working surface, be condensed at the condensation surface and be directed back to the outer chamber.

4,367,630

SYSTEM FOR RAPIDLY CHILLING CARCASSES

Vincent R. Bernard, Dallas County; R. James Ellis, Collin County, both of Tex., and Ivan Rasovich, Los Angeles County, Calif., assignors to The Jimmy Dean Meat Company, Inc., Dallas, Tex.

Filed Sep. 10, 1980, Ser. No. 186,145
Int. Cl.[3] F25D *13/06*
U.S. Cl. 62—63 **9 Claims**



1. A method of chilling a fresh-killed carcass at substantially original body temperature to a temperature slightly above freezing, comprising the steps of:

(a) providing an enclosure including a first subchamber with a tank of cryogenic liquid therein, and a second subchamber filled with circulating vapors liberated from the tank of cryogenic liquid;

(b) advancing the carcass into the first subchamber and over the tank of cryogenic liquid;

(c) lowering the carcass into the tank of cryogenic liquid;

(d) lifting the carcass out of the tank of cryogenic liquid after a time sufficient to crust-freeze exterior portions of the carcass;

(e) advancing the carcass into the second subchamber;

(f) holding the carcass in the second subchamber and the circulating vapors liberated from the tank of cryogenic liquid for a time sufficient to chill the interior portions of the carcass and accomplish substantial equilibration thereof; and

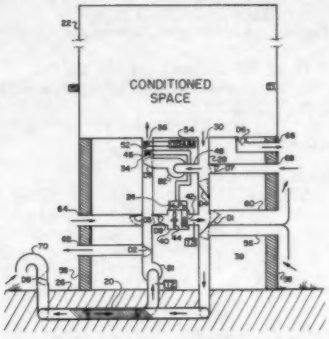
(g) removing the carcass from the second subchamber for further processing.

4,367,631

AIR CONDITIONING APPARATUS AND METHODS USING UNDERGROUND DUCT

Harold R. Johnson, P.O. Box 849, Monroe, N.C. 28211[0]; Harold F. McKnight, and Richard Ferguson, both of Charlotte, N.C., assignors to Harold R. Johnson, Monroe, N.C.

Filed Jun. 16, 1980, Ser. No. 159,671
Int. Cl.[3] F25D *23/12*
U.S. Cl. 62—79 **9 Claims**



1. An energy-conserving method for exchanging heat between air and a heat pump at the reservoir side thereof for enabling heat exchange between the working side of said heat pump and indoor air thereat, said method including the use of underground duct means, said method comprising:

(a) passing ambient outdoor air to said heat pump through said duct means for exchanging heat between said passing air and said duct means when said exchange is favorable to condition the temperature of said ambient air for increased efficiency of operation of said heat pump as compared to passing ambient outdoor air directly to said heat pump for said exchanging heat therewith; and

(b) selectively discontinuing step (a) while passing ambient outdoor air directly to said heat pump for directly exchanging heat therebetween when the temperature of said ambient air passing directly to said heat pump is favorable for increased efficiency of operation of said heat pump as compared to passing air through said duct means to said heat pump, while passing other ambient outdoor air through said duct directly back to the outdoors for exchanging heat between said duct and said other air passing therethrough.

4,367,632

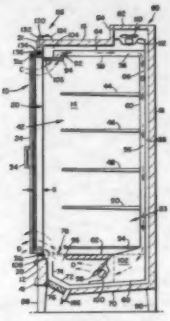
FLEXIBLE DOOR OPERATING MECHANISM FOR REFRIGERATED MERCHANDIZER DISPLAY CABINET

Fayez F. Ibrahim, Niles; Elmer J. Subera, Cassopolis, and James E. Myers, Niles, all of Mich., assignors to Tyler Refrigeration Corporation, Niles, Mich.

Filed May 8, 1981, Ser. No. 261,872
Int. Cl.[3] F25D *21/12*
U.S. Cl. 62—82 **25 Claims**

10. A method for operating a refrigerated display cabinet having refrigeration means and a display space therein, and having an opening in at least one wall of the cabinet for communicating ambient outside air with the air in the cabinet, the opening comprising an access opening for permitting products to be moved into and out of said display space, air moving means for circulating at least one air band within the cabinet and into contact with the refrigeration means during a refrigeration cycle, covering means for the opening including a barrier door for substantially covering the access opening, and the refrigeration means comprising a low temperature element; the method comprising the steps of:

selectively operating the display cabinet and a refrigeration cycle of operation and in a defrost cycle of operation; during a refrigeration cycle, circulating the air band through the cabinet and into contact with the low temperature element; during a defrost cycle of operation, terminating operation of the refrigeration means, causing ambient air to be drawn into the cabinet and across the low temperature element, causing the defrost ambient air to be ejected from the cabinet, creating a gap between the



barrier door and the access opening to enable ambient air through-flow and providing for closing of the gap between the barrier door and the access opening by exertion of an outside force by the take-up of motion in a flexing means and re-establishment of the gap when the force is removed; the closing of the gap transmitting the exerted outside force to the cabinet; whereby ambient air is drawn into the air band and across the low temperature element to defrost the same by communicating ambient air with the air band in the display cabinet.

4,367,633

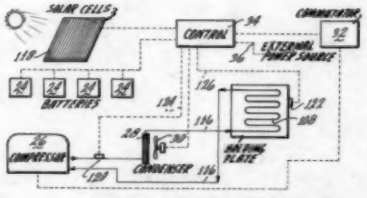
BATTERY AND SOLAR POWERED REFRIGERATING SYSTEM

Ronald L. Strathman, P.O. Box 6557, San Diego, Calif. 92106

Filed Jan. 7, 1980, Ser. No. 110,233

Int. Cl.³ F25B *27/00*; F25D *23/12*

U.S. Cl. 62—236 **2 Claims**



1. A refrigerating system comprising:

a thermally insulated storage container having an interior compartment;

a refrigerant circuit for cooling the interior compartment of the storage container when energized with a predetermined minimum level of electric power, including a refrigerant compressor for delivering compressed refrigerant, a condensor for receiving the compressed refrigerant and delivering it to an evaporator coil, and a fan for circulating air past the condenser;

a holding plate tank mounted in the interior compartment of the storage container and housing the evaporator coil;

a quantity of a eutectic solution within the tank having a freezing point below 32° F.;

a plurality of batteries for providing the predetermined minimum level of electric power when sufficiently charged;

an array of solar cells having an output which is above the predetermined minimum level of power when exposed to a sufficient intensity of solar radiation; and

control means interconnected with the refrigerant circuit, the batteries and the solar cells for causing the refrigerant circuit to be powered by the solar cells when their output is above the predetermined minimum level of power, and for causing the refrigerant circuit to be powered by the batteries when the output of the solar cells is below the predetermined minimum level of power, the control means including first thermostat means for causing the refrigerant circuit to operate only so long as the temperature of the eutectic solution is above a first predetermined temperature, and second thermostat means for causing the fan to operate only when the temperature of the refrigerant delivered by the compressor is above a second predetermined temperature.

4,367,634

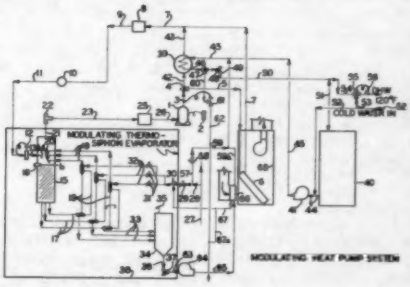
MODULATING HEAT PUMP SYSTEM

Bruce E. Bolton, 485 Akron Rd., Wadsworth, Ohio 44281

Continuation-in-part of Ser. No. 29,325, Apr. 12, 1979, abandoned. This application Jan. 19, 1981, Ser. No. 226,507

Int. Cl.³ F25B *27/02*

U.S. Cl. 62—238.6 **5 Claims**



1. A heating and cooling system for use in a dwelling comprising,

a fluid source of heat,

a source of fluid heat transfer media,

a closed circuit heat transfer system comprising

a recirculating thermosiphon heat transfer unit having an inner pipe disposed within an outer pipe to define a coaxial pipe having an annulus therebetween, said pipes being coiled to form a coil helix,

container means for holding a fixed level of a liquid phase of the fluid heat transfer media,

one end of said inner pipe being connected to the bottom of said container means with the liquid phase of said fluid heat transfer media flowing therethrough,

the opposite end of said inner pipe being connected to said container means above the level of the liquid phase of said fluid heat transfer media,

the outer of said pipes being connected at its one end to the pipes containing the source of fluid heat,

the opposite end of said outer pipe being connected to means to enable a self-draining flow of said fluid heat source through said annulus,

variable capacity compressor means connecting with said container means being operable to move the fluid heat transfer media through said system at a controllable mass rate,

the input of said compressor means being connected with

said container means above the level of the fluid phase of said media disposed therein,

the flow of said fluid heat source being effective to cause at least a partial vaporization of the heat transfer media in said inner pipe being operable to separate said media into a liquid phase and a vapor phase whereby said media flows through said inner pipe absorbing the heat of vaporization,

the liquid phase of said heat transfer media returning to the lower part of said container means and the vapor phase of said heat transfer media returning to the input of said compressor means,

and heat exchanger means operatively connected to the output of said compressor for receiving the vapor phase of said heat transfer media and removing heat therefrom.

4,367,635

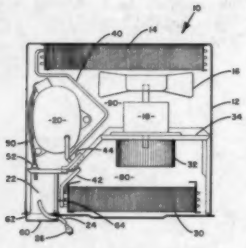
COMBINATION CONTROL BOX AND SERVICE CORD STRAIN RELIEF FOR AN AIR CONDITIONING UNIT

Brad G. Leech, Fayetteville, and Cosimo Caronna, Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jun. 15, 1981, Ser. No. 274,013

Int. Cl.³ F25D *23/12*

U.S. Cl. 62—259.1 **10 Claims**



1. An air conditioning unit which comprises a compressor, an indoor heat exchanger and an outdoor heat exchanger connected to form a refrigeration circuit, fan means for circulating air to be conditioned in heat exchange relation with the indoor heat exchanger, a control box wherein electrical components for the unit may be located, a power cord for connecting electrical components of the unit to an external power source and wherein said control box includes a clip portion forming a cord strain relief device, said power cord passing between the clip portion and a planar surface of the control box and further including fastening means for displacing the clip portion to secure the power cord between the clip portion and the planar surface.

4,367,636

AIR CONDITIONER

Kiyoshi Sakuma; Isamu Nakazima, and Tetuo Sugiyama, all of Shizuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1981, Ser. No. 288,353

Claims priority, application Japan, Sep. 24, 1980, 55-135521[U]; Sep. 24, 1980, 55-135522[U]; Sep. 24, 1980, 55-135523[U]

Int. Cl.³ F25D *23/12*

U.S. Cl. 62—262 **10 Claims**

1. An air conditioner comprising:

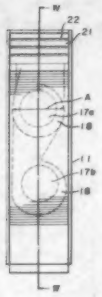
a casing having a front and a rear;

an air suction grille adjacent said front of said casing;

a heat exchanger positioned adjacent, and to the rear of, said grille;

an inner casing positioned to the rear of said heat exchanger, said inner casing having at least an upper and a lower suction inlet facing said heat exchanger, the perpendicular distance between said heat exchanger and said lower inlet being greater than the perpendicular distance between said heat exchanger and said upper inlet;

a multiblade blower facing each of said inlets from the rear thereof,



a casing outlet; and

first and second air passages respectively connected between the blowers of said upper and lower inlets and said outlet, said second air passage extending between said rear of said casing and said blower of said upper inlet.

4,367,637

APPARATUS FOR THE MAINTENANCE OF REFRIGERATION EQUIPMENT

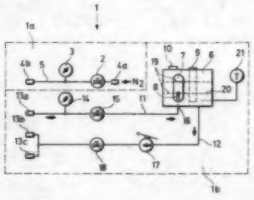
Horst Paulokat, Horneburg, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Jun. 18, 1981, Ser. No. 274,870

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1980, 3024098

Int. Cl.³ F25B *45/00*

U.S. Cl. 62—292 **9 Claims**



1. An apparatus for the maintenance of refrigeration equipment, comprising first conduit means (**1***a*) including first coupling members connectable to said refrigeration equipment and to a source of nitrogen under pressure for pressure emptying said refrigeration equipment, second conduit means (**1***b*) including second coupling members and a source of refrigerant connectable to refrigeration equipment and to said source of refrigerant for replenishing refrigeration equipment with new refrigerant, and venting means forming part of said second means connectable to refrigeration equipment for venting the refrigeration equipment, and wherein said second conduit means (**1***b*) comprise a tank for holding a quantity of refrigerant, an inlet conduit (**11**) operatively connected to said tank (**6**), an outlet conduit (**12**) operatively connected to said tank (**6**), a pressure gage (**14**) operatively connected to said inlet conduit, a valve (**15**) operatively connected in said inlet conduit (**11**), further valve means (**18**) connected in said outlet conduit (**12**),

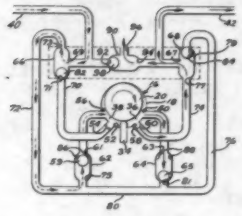
and pump means (17) operatively connected to said outlet conduit (12) for conveying refrigerant, said second coupling means being connected to the free end of said outlet conduit means (12).

4,367,638

REVERSIBLE COMPRESSOR HEAT PUMP

David A. Gray, Tyler, Tex., assignor to General Electric Company, Louisville, Ky.

Filed Jun. 30, 1980, Ser. No. 164,666
Int. Cl.³ F25B *13/00*; F04C *18/00, 29/08*
U.S. Cl. 62—324.6 8 Claims



1. A reversible hermetically sealed rotary refrigerant compressor comprising:

a hermetic casing containing a high pressure refrigerant gas including a first and second opening;

a compressor unit positioned in said casing; including a cylinder having an annular chamber, spaced under and lower end walls connecting with said cylinder and enclosing said annular chamber, a rotor eccentrically rotatable within said chamber with the peripheral surface of said rotor arranged to move progressively into sealing relation with successive portions of said annular chamber;

a reversible motor in said casing having a shaft thereon extending into said cylinder for driving said rotor;

a radial slot in said cylinder communicating with said chamber;

a blade slidably positioned in said radial slot;

means biasing said blade against said rotor for following said rotor thereby to drive said chamber into interchangeable high and low pressure sides;

a first gas suction port in said cylinder communicating with one side of said chamber;

a first gas discharge port in said cylinder communicating with the other side of said chamber;

a second gas suction port in said cylinder communicating with the other side of said chamber;

a second gas discharge port in said cylinder communicating with said one side of said chamber;

a discharge check valve associated with each of said discharge ports dimensioned to prevent reverse flow of refrigerant into the respective side of said chamber;

a suction check valve associated with each of said suction ports dimensioned to prevent reverse flow of refrigerant from the respective side of said chamber;

first conduit means connecting said first suction port to said one casing opening and said first discharge port to said other casing opening when rotation of said rotor in one direction;

second conduit means connecting said second suction port to said other casing opening and said second discharge port to said one casing opening when rotation of said rotor is in the other direction; and

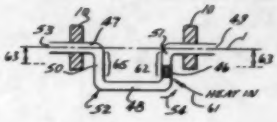
valve means communicating with said first and second conduit means being responsive when high pressure refrigerant gas is flowing through one of said conduit means from its associated discharge port for discharging a portion of said high pressure refrigerant gas therefrom into said casing to maintain the interior of said casing at said high pressure while preventing the flow of high pressure discharge gas from entering the suction port through the other of said conduit means.

4,367,639

ROTARY THERMODYNAMIC APPARATUS AND METHOD

Frederick W. Kantor, 2875 Broadway, New York, N.Y. 10025

Continuation of Ser. No. 4,606, Jan. 18, 1979, abandoned, which is a division of Ser. No. 770,316, Feb. 18, 1977, Pat. No. 4,136,530, which is a division of Ser. No. 569,478, Apr. 18, 1975, Pat. No. 4,010,018, which is a continuation of Ser. No. 78,552, Oct. 6, 1970, abandoned, which is a continuation-in-part of Ser. No. 864,112, Oct. 6, 1969, Pat. No. 3,808,828. This application Mar. 3, 1981, Ser. No. 240,135
Int. Cl.³ F25B *3/00*
U.S. Cl. 62—499 35 Claims



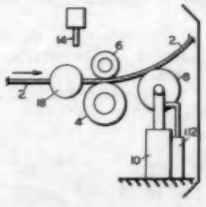
1. A rotary thermodynamic system including a rotatable fluid flow conduit having radially outwardly-directed and inwardly-directed sections in which conduit the thermodynamic pressure drop decreases with an increase in the rate of flow of working fluid through said system, and impedance control means for providing an increase of pressure drop for an increase in the rate of flow of working fluid through said conduit, the amount of said increase in pressure drop being effective to cause the overall pressure drop for said system to increase with an increase in said rate of flow, and thereby stabilizing the flow of working fluid through said conduit, said impedance control means including a liquid trap.

4,367,640

APPARATUS FOR FORMING SHEET METAL DUCT WORK

Steven C. Heitzman, 2664 NW. Thurman St., Portland, Oreg. 97210

Continuation of Ser. No. 115,726, Jan. 28, 1980, abandoned. This application Jun. 15, 1981, Ser. No. 273,633
Int. Cl.³ B21D *5/14*
U.S. Cl. 72—11 10 Claims



1. Apparatus for forming sheet metal ducts of variable conical configuration from a pre-cut blank having a marked baseline and marked element lines thereon comprising:

(a) a frame supporting

(1) power-driven feed rolls,

(2) pinch rolls adapted to pinch the blank against the feed rolls,

(3) a bending roll rotatably supported in spaced relation to the feed rolls,

(b) means for maintaining the baseline of the blank at its established position relative to the frame, and

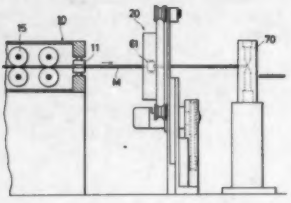
(c) means for maintaining the successive element lines of the blank parallel to the axis of the feed rolls.

4,367,641

APPARATUS FOR BENDING AND TWISTING ELONGATED PIECES

Tomihiko Mizutani, Anjyo, Japan, assignor to Inoue MTP Kabushiki Kaisha, Nagoya, Japan

Filed Aug. 22, 1980, Ser. No. 180,405
Claims priority, application Japan, Jan. 21, 1980, 55-5580
Int. Cl.³ B21D *11/14*
U.S. Cl. 72—65 5 Claims



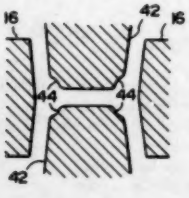
1. An apparatus for bending an elongated piece which is conveyed in the longitudinal direction thereof, comprising a feeding unit having a pair of feeding rolls for feeding an elongated piece having a longitudinal axis along a path into a bending unit having a pair of bending rolls located downstream from said feeding unit, said feeding rolls and said bending rolls being arranged along said path and separated by a predetermined distance, said bending unit comprising means for displacing the bending rolls in directions perpendicular to the path to bend the elongated piece in the directions perpendicular to the longitudinal axis of the elongated piece and for rotating the bending rolls about the axis of the path extending through the nip of the bending rolls and the longitudinal axis of the elongated piece to simultaneously twist and bend the elongated piece said bending rolls serving to movably support said elongated piece so that said piece can be fed through said bending rolls for said bending and twisting operations and means to simultaneously rotate and perpendicularly move said bending rolls.

4,367,642

METHOD OF PRODUCING H-BEAMS

Teruyuki Nakanishi, Kibi, and Kiyoshi Hitomi, Kurashiki, both of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Continuation of Ser. No. 74,501, Sep. 11, 1979, Pat. No. 4,322,962. This application Aug. 14, 1981, Ser. No. 292,874
Claims priority, application Japan, Sep. 12, 1978, 53-112731
Int. Cl.³ B21B *1/12*
U.S. Cl. 72—234 6 Claims



1. A method of producing a steel H-beam having joints between a web and flanges high in mechanical strength and toughness by means of universal mills, comprising:

rolling a piece by means of a two-high rolling mill having breakdown rolls thereby performing a breakdown process;

repeatedly forming by means of a roughing process excess convexes on said piece during a roughing pass, said convexes being formed alternately on the outer side surface and on the inner side surfaces of the joints between the web and the flanges of the piece being rolled by means of two or more roughing universal mills for performing a pass, whereby metal flows are forcibly caused to said joints to thereby increase the amounts of strain of said joints; and

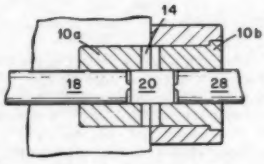
pressing said convexes to provide a planer surface by means of a finishing process, thereby obtaining a steel H-beam having predetermined dimensions.

4,367,643

METHOD AND APPARATUS FOR COLD FORMING METAL ARTICLES HAVING IRREGULAR CROSS-SECTION

Kenneth P. Hackett, Nashville, Tenn., assignor to The Gleason Works, Rochester, N.Y.

Filed Dec. 16, 1980, Ser. No. 216,956
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—353 8 Claims



1. An apparatus for defining a die cavity in an apparatus for cold forming a metal slug into an article having irregular lateral cross-section, including a hydraulically operated, longitudinally movable, force applying member adapted to apply force to said slug during formation, said die cavity defining apparatus comprising a frame defining a central bore and a plurality of elongated channels extending generally radially from said central bore, said central bore being located coaxially with said force applying member, a plurality of elongated die nibs, each of said die nibs having a first end and a second end, said first end being mounted within said bore, at least one of said die defining members being slidably mounted within one of said channels, said slidable member including an inclined surface at said second end, cam bar means secured to said force applying member, said cam bar means including a cam surface adapted to engage said inclined surface of said slidable member to urge said sliding member generally radially toward said bore when said force applying member is moved to a force applying position.

4,367,644

ADJUSTABLE DIE AND KEY ASSEMBLY

Fred Kramer, Downingtown, Pa., and Gregg Gill, Cuyahoga Falls, Ohio, assignors to Pennsylvania Crusher Corporation, Allentown, Pa.

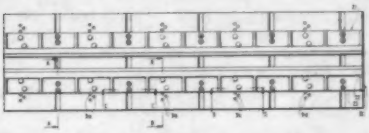
Filed Oct. 6, 1980, Ser. No. 194,101
Int. Cl.³ B21D *5/02*
U.S. Cl. 72—389 19 Claims

1. An assembly for precisely positioning a pair of die members on the bed of a press beneath a ram mounted for movement toward and away from said bed, said assembly comprising:

a frame member having an upwardly facing surface for supporting said die members;

clamping means extending between each of said die members and said frame member for selectively clamping and

unclamping each of said die members with respect to said upwardly facing surface; and



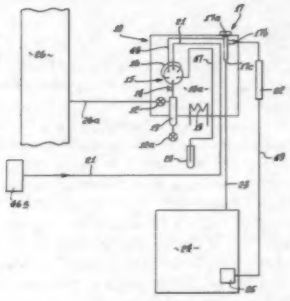
self-lifting means on said die members for lifting said die members, when unclamped, out of contact with said upwardly facing surface.

4,367,645

HOT GAS SAMPLING

Gilbert F. Froment, Deurle, Belgium, assignor to Kinetics Technology International Corporation, Pasadena, Calif.

Filed Dec. 3, 1980, Ser. No. 212,583
Int. Cl.³ G01N *31/08, 1/22*
U.S. Cl. 73—23.1 **13 Claims**



1. An apparatus for sampling a stream of hot gas containing hydrocarbons, and employing a heated transfer valve, a source of carrier gas for sampling and diluting the hot gas and transferring it over a hot capillary coated pre-separation column to analytical equipment, a gas splitter and a gas receiver, the improvement comprising

(a) said transfer valve being heated and having multiple inlet ports and multiple outlet ports,

(b) there being a sample receiving duct in communication with said valve,

(c) said valve having relatively movable members defining a sampling position, and an injection position,

(d) said sampling position characterized in that one inlet port, the sample receiving duct and one outlet port are connected in series to pass said hot gas to said receiver, and other inlet and outlet ports are connected in series to pass the carrier gas to the analytical equipment through the splitter and a hot line which is a pre-separation coated capillary column,

(e) said injection position characterized in that said one inlet port and said one outlet port are connected in series to pass said hot gas to the receiver, and said other inlet port, said sample receiving duct and said other outlet port are connected in series with said source of carrier gas to pass a sample of hot gas in said duct to the analytical equipment through the splitter and a hot line which is a pre-separation coated capillary column,

(f) a gas chromatograph connected in series with the splitter to receive a portion of the hot gas sample from the splitter, and

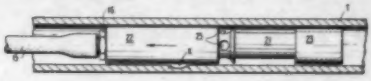
(g) a side passage connected with the splitter to pass split carrier gas toward a flow controller.

4,367,646

APPARATUS AND METHOD FOR DETECTING AND MEASURING LOCALIZED AREAS OF DETERIORATION ON THE INTERIOR OF TUBES

J. Hunter Allen, Sr., Rte. 7, Box 1074, Mt. Juliet, Tenn. 37122; Amos L. Gillespie, Jr., 1184 Ashley Lake Dr., Marietta, Ga. 30067, and George D. Johnson, 3358 Ezell Rd., Nashville, Tenn. 37211

Filed Nov. 7, 1980, Ser. No. 204,961
Int. Cl.³ G01B *13/22, 13/10*
U.S. Cl. 73—37.9 **17 Claims**



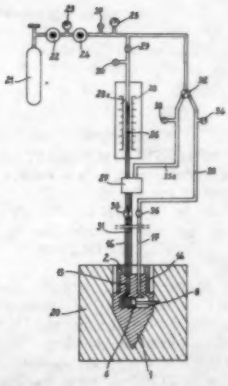
1. A probe for use in apparatus in detecting, measuring the extent of and locating localized deteriorated areas on the interior of tubes, said probe being an elongated cylindrical member having an axially extending recessed center section of substantially lesser diameter than and lying between two axially extending end portions, said probe containing an internal passage extending from the outer end of one of said end sections to an aperture in said recessed center section, and a narrow baffle ring extending outwardly transversely of said center section between said aperture and the other one of said end sections, the diameters of said end sections and baffle ring being closely equal, said outer end section containing at least one opening extending between said recessed center section and the outer end of said other end section, said baffle ring having a circumferential cross section tapering from a thicker portion at the juncture with said recessed center section to a thin portion extending circumferentially of the outer tip.

4,367,647

STATIC PENETROMETER

Francois Barnoud, 12 Rue Chancelier-de-l'Hospital, Dijon (Cote-d'Or), and Jean-Bernard Labays, Saint-Martin-sous-Montaigu, (Saone-&-Loire), both of France

Filed Jan. 19, 1981, Ser. No. 226,405
Claims priority, application France, Jan. 18, 1980, 80 01557
Int. Cl.³ G01N *3/42*
U.S. Cl. 73—84 **9 Claims**



1. A static penetrometer usable in combination with a drill string, said penetrometer comprising:

a downwardly directed point fixed at the lower end of said string and having a substantially conical lower portion and a substantially cylindrical upper portion, said upper

portion having an upright outer surface and a bore opening horizontally at said surface;

a horizontal rod in said bore of said point having a rod end horizontally diaplaceable in one direction between an outer position spaced horizontally outward from said surface and an inner position generally flush with said surface, whereby said string with said point can be driven or drilled down into the ground with said rod in said inner position to form a hole in which said point fits snugly;

a fluid cylinder in said point connected to said rod;

means for pressurizing said cylinder and urging said rod from said inner to said outer position and thereby pressing said upper portion oppositely to said direction against the side of said hole opposite said rod end; and

means connected to said rod and cylinder for indicating the position of said rod end relative to said surface and the pressure exerted horizontally back against said rod end when same is being urged outward by the pressurizing means.

4,367,648

DARK FIELD VIEWING APPARATUS

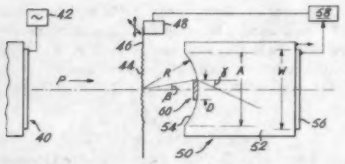
David A. Sinclair, and Ian R. Smith, both of London, England, assignors to National Research Development Corporation, London, England

Filed Mar. 19, 1981, Ser. No. 245,547

Claims priority, application United Kingdom, Mar. 25, 1980, 8009980

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—620 **32 Claims**



1. Dark field viewing apparatus comprising:

a source of acoustic radiation;

spatially integrating acoustic receiving means disposed in axial alignment with the source; and

on-axis elimination means;

one of the source and the receiving means being focused on a point in an object plane, and the elimination means eliminating any acoustic radiation which in the region of the focus in the object plane would travel substantially parallel to the axis of the apparatus.

4,367,649

ACOUSTIC POLARIMETER

Jean Rouge, and Andre Robert, both of Paris, France, assignors to Thomson-CSF, Paris, France

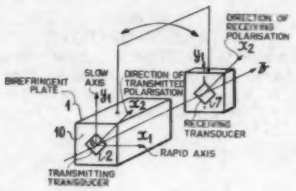
Filed Jan. 26, 1981, Ser. No. 228,622

Claims priority, application France, Jan. 29, 1980, 80 01895

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—645 **9 Claims**

1. An acoustic polarimeter for measuring the anisotropy of a sample having substantially parallel faces so as to permit determination of the directions of the fast axis $O\xi$ and of the slow axis $O\eta$ as well as the phase-shift angle ϕ_0 at a frequency $\omega_0/2\pi$ between the components of a transverse acoustic wave along the axes $O\xi$ and $O\eta$, said wave having passed through the sample at right angles to its faces, the polarimeter comprising a birefringent plate for measuring the fast axis Ox_1 and slow axis Oy_1, an electroacoustic transducer which is fixed on one face of the birefringent place whose opposite face can be placed in contact with the entrance face of the sample, said transducer transmitting acoustic waves which are polarized substantially along an axis Ox_2 located at 45° with respect to the fast axis Ox_1 of the plate and said transducer being connected to means for generating high-frequency electrical signals having an angular frequency ω which can be varied manually and/or frequency-modulated at the low frequency pulsatance Ω, wherein the waves which have passed through the sample are received by a single transducer fixed on a support frame and applied against the exit face of the sample, wherein the receiving transducer is sensitive only to the component of the acoustic wave along the axis Ox_2, wherein the assembly formed by the transmitting transducer, the measuring plate and the support frame of the receiving transducer is capable of rotating as a single unit about the axis Oz in an arrangement



designated as a "probe",wherein the electrical signals delivered by the receiving transducer are applied to receiving circuits, a signal delivered at the output of said circuits bing applied to a null indicator, wherein, in the case of an angular frequency $\omega=\omega_0$ of the wave, a zero measurement read on the indicator is obtained if the angle between the axis $O\xi$ or the axis $O\eta$ and the axis Ox_2 is zero, thus determining the orientation of the axis $O\xi$ to within 90°, wherein, after rotation of the probe through an angle of 45° and by varying the value of the angular frequency of the wave, the direction of variation on the null indicator gives the sign of the phase shift ϕ_0 and the discrimination between slow axis and fast axis of the sample and the value ϕ_0 is obtained from the values ω_0 and ω_1 at which the indicator is again at zero.

4,367,650

FIXTURE FOR MOUNTING VIBRATION SENSOR NEAR LIMITED ACCESS MACHINE PARTS

Reinhard Hilgner, Karlsruhe; Wolfgang Utz, Kandel, and Heinrich Schröder, Karlsruhe, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 28, 1981, Ser. No. 258,531

Claims priority, application Fed. Rep. of Germany, May 5, 1980, 3017193

Int. Cl.³ G01H *11/00*

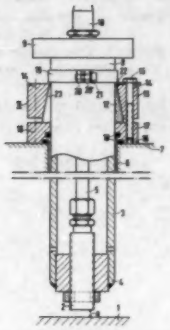
U.S. Cl. 73—649 **3 Claims**

1. A fixture for mounting a sensing transducer in a machine, the fixture having a probe tube having a longitudinal axis, the probe tube being fastened at an opening of a machine housing so as to be axially movable therethrough, the sensing transducer being disposed at a lower end portion of the probe tube which is inserted within the machine housing, the fixture further comprising:

collet-type holding means for coupling the probe tube to the machine housing in an axially slidable manner; and

setting collar means disposed around the probe tube on the other side of said collet-type holding means from the

machine housing, said setting collar means being in contact with a contact surface of said collet-type holding

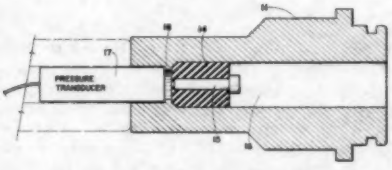


means for facilitating axial displacement of the probe tube by a predetermined distance.

4,367,651
PRESSURE TRANSDUCER BODY

Donald C. Cameron; Donnie L. Stufflebeam, both of Tulsa, Okla., and John W. Ekey, Harris, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 30, 1981, Ser. No. 248,770
Int. Cl.³ G01L *7/00*; F15B *15/18*; F16J *3/00*
U.S. Cl. 73—706 **5 Claims**



1. A pressure transducer body having a first end and a second end defining a bore of generally circular crosssection which extends, along with its axis of generation, from the first end to the second end, and having

(a) means for receiving a pressure transducer,

(b) a fluid reservoir,

(c) a stationary elastic plug member, and

(d) a chamber for receiving a fluid under pressure;

said means for receiving a pressure transducer, (a), being located near the first end of said transducer body and in fluid communication with said fluid reservoir,

said fluid reservoir, (b), being defined within said bore and being located between said means for receiving a pressure transducer, (a), and said stationary elastic plug member,

said stationary elastic plug member, (c), having a first end in fluid communication with said fluid reservoir (b), and a second end adjacent to said chamber for receiving a fluid under pressure,

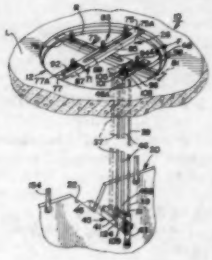
said chamber for receiving a fluid under pressure, (d), being defined within said bore,

said plug member (c) also having a rigid pin member, (p), embedded therein; said pin member, (p), being defined by an elongate shaft extending partially through said stationary elastic plug (c), and positioned coaxial to the bore and having (i) a first end disposed toward said fluid reservoir, (b), and defining a flat or substantially flat face which is positioned perpendicular to the bore, and (ii) a second end disposed toward said chamber for receiving a fluid under pressure (d), said second end having an attached head which is external to said plug member, (c), and which has a flat or substantially flat face positioned perpendicular to the bore, the flat face of the head having a surface area greater than a cross-sectional area of the shaft but less than a cross-sectional area of the bore.

4,367,652
METHOD AND APPARATUS FOR MONITORING WASTEWATER

Nicholas A. Venuso, Hickory Hills, Ill., assignor to The Metropolitan Sanitary District of Greater Chicago, Chicago, Ill.

Filed Jul. 7, 1980, Ser. No. 166,372
Int. Cl.³ G01F *15/00, 15/14, 15/18*
U.S. Cl. 73—861 **11 Claims**



8. A probe carrying means for use in monitoring wastewater flowing through manholes, comprising:

a rigid transverse elongated member;

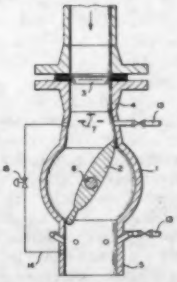
a long rigid rod adapted to be positioned in an upright position and connected at its lower end to the elongated member extending transversely to the longitudinal axis of the rod;

said transverse elongated member having a lower knife edge.

4,367,653
DEVICE FOR MEASURING SOLIDS IN A MOVING STREAM

Hans-Hugo Richter, and Fritz-Dieter Trumper, both of Dortmund, Fed. Rep. of Germany, assignors to Uhde GmbH, Dortmund, Fed. Rep. of Germany

Filed Mar. 31, 1981, Ser. No. 249,654
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1980, 3013027
Int. Cl.³ G01F *3/14*
U.S. Cl. 73—861.21 **8 Claims**



1. A measuring device for measuring solids of a moving stream in a closed system in which the prevailing pressure is equal to or higher than atmospheric pressure, comprising:

a. a housing having a portion larger than a vertically disposed inlet opening located above said larger portion so that a solid-free internal volume remains available adjacent the inlet opening;

b. a diverter member rotatable about a horizontal axis within said housing, the length of said diverter member exceeding the width of the housing and having a center of gravity located above the axis of rotation wherein the upper edge of the diverter member is adapted to be alternately positioned outside the flow of solids adjacent one wall of said housing and the lower edge of said diverter member is adapted to contact the opposite wall of said housing; and

c. position sensing means for sensing and transforming the rotational movement of said diverter member into an output signal.

4,367,654

DEVICE FOR MEASURING THE FLOW VELOCITY OF FLUIDS

Lucas Ymker, Culemborg, and Christiaan J. Hoogendijk, H'veld-G'dam, both of Netherlands, assignors to Altometer, Productiebedrijf Van Rheometron A.G., Sliedrecht, Netherlands

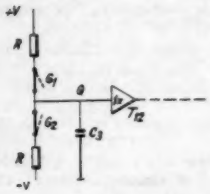
PCT No. PCT/NL79/00005, § 371 Date Jun. 25, 1980, § 102(e) Date Jun. 25, 1980, PCT Pub. No. WO80/00876, PCT Pub. Date May 1, 1980

PCT Filed Oct. 25, 1979, Ser. No. 205,998

Claims priority, application Netherlands, Oct. 25, 1978, 7810630

Int. Cl.³ G01F *1/66*

U.S. Cl. 73—861.29 **11 Claims**



1. A device for measuring the flow velocity of fluids comprising: at least one pair of electro-acoustic transducers positioned at the ends of a measurement path, each pair of said transducers simultaneously transmitting acoustic pulses and receiving the same at first and second times dependent on the velocity of the fluid, a clock pulse generator, a transmission circuit, a receiving circuit including an amplifier and a separate detection circuit for each of the transducers, an integration circuit including an integration capacitor for use in processing the difference in propagation time of the acoustic pulses wherein the transmission and reception times for each of the transducers are determined, said integration capacitor being connected to the branch point of a two-legged potential divider which is connected to a gate circuit and which has in each leg a switching means conductive in the rest condition after the transmission time, two different potentials being supplied in the rest condition to the one leg and to the other leg of said divider whereby the capacitor adjusts itself to the middle of the potential difference, while controlled by the gate circuit, the switching means associated with the one transducer of each pair being blocked after the first reception time and subsequently the switching means associated with the other transducer of each pair being blocked after the second reception time.

4,367,655

METHOD AND APPARATUS FOR MEASURING THE CLOSING AND HOLDING FORCE ON PRESSURE DIECASTING AND INJECTION MOULDING MACHINES

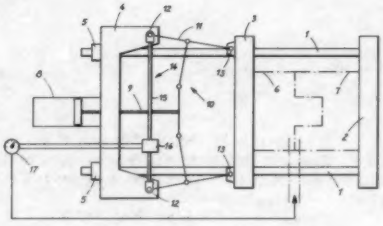
Hans Blüml, Burgthann, and Gerhard Schmidt, Wendelstein, both of Fed. Rep. of Germany, assignors to Mannesmann Demag Kunststofftechnik Zweigniederlassung der Mannesmann Demag Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

Filed Jul. 17, 1980, Ser. No. 169,656

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1979, 2928940

Int. Cl.³ G01L *5/00*

U.S. Cl. 73—862.54 **9 Claims**



1. A method of measuring the closing and holding force exerted on a moulding tool of a pressure die casting machine or an injection moulding machine, said machine having as a closing and holding device a toggle lever mechanism with toggle levers which are pivoted to projecting lugs of an end plate which is supported on bars of the machine, and to a tool backing plate which is slidable on said bars, the lugs projecting towards said tool backing plate, comprising the step of: determining the change in distance between a point on said end plate at one of said lugs and a point on said end plate spaced from said one lug in a direction transverse to said bars by an amount equalling at least approximately half the distance between said lugs, to thereby measure said closing and holding force.

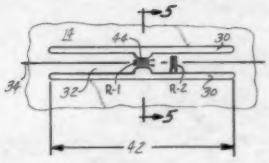
3. In a die casting or injection moulding machine having an end plate supported on bars extending with their axes parallel to one another, a first tool backing plate fixedly secured on said bars opposite to said end plate, a second tool backing plate between said end plate and said first tool backing plate and movable on said bars in parallel direction thereto, a mould tool secured to said second tool backing plate, a toggle lever mechanism as a holding and closing device for moving said movable tool backing plate and for closing said mould tool, said toggle lever mechanism having toggle levers pivoted to lugs on said end plate, which project towards said movable tool backing plate, and also pivoted to the movable tool backing plate, said lugs being offset with respect to the bars in a direction normal to the axes of the bars: a measuring apparatus for measuring the closing and holding force exerted onto said mould tool, said apparatus comprising a measuring element extending between a point at one of said lugs and a point on said end plate spaced from said lug in a direction transverse to said bars by an amount equalling at least approximately half the distance between said lugs, for measuring the change in distance of said points under the deflection of the end plate when loaded by said holding and closing force.

4,367,656

SINGLE AXIS FORCE TRANSDUCER

Joseph E. Fritsch, Oak Park, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.

Filed Dec. 1, 1980, Ser. No. 211,595
Int. Cl.³ G01L 1/22
U.S. Cl. 73—862.65 4 Claims



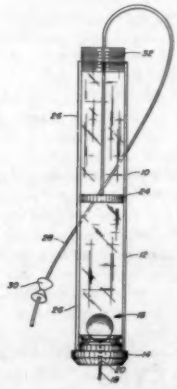
1. A single axis force transducer comprising:
an integral homogeneous longitudinally extending principal beam having opposed generally parallel sidewalls and subject to bending loading transverse to its neutral axis and subject to tensile and compressive loading parallel to its neutral axis, said principal beam being provided with an intermediate central beam defined by two reltively narrow parallel longitudinally extending slots extending through the principal beam from one of said sidewalls to the other of said sidewalls, said central beam being provided with means for mechanically amplifying tensile and compressive loads applied to the principal beam, and
strain sensing means associated with said means for mechanically amplifying loads.

4,367,657

SLUDGE SAMPLER

Ralph C. Ward, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 25, 1981, Ser. No. 277,435
Int. Cl.³ G01N 1/12
U.S. Cl. 73—864.61 6 Claims



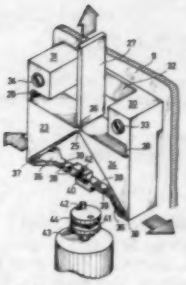
1. A sludge sampler comprising:
an elongated generally cylindrical housing having an upper end and a lower end;
a baffle containing an aperture disposed within said housing separating said upper and lower ends;
a flexible tube having a valve for presure control within said housing communicating with said aperture in said baffle and exiting said housing at said upper end;
a ball check valve, an upsetting pin and an upsetting pin guide disposed at said lower end of said housing.

4,367,658

OSCILLATING MEMBER FOR TRANSFORMING A ROTARY MOTION INTO A RECIPROCATING MOTION

Günter Rochelt, Josef-Schwarz-Weg 11, DE 8000 München - Solln, Fed. Rep. of Germany

Filed Jul. 31, 1980, Ser. No. 175,204
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1979, 2931479
Int. Cl.³ F16H 21/32, 21/18
U.S. Cl. 74—40 13 Claims



1. An oscillating member for transforming a rotary motion of a drive motor into a reciprocating motion, comprising a bell-crank lever having substantially stiff lever arms which extend at an angle to each other to their junction with one another and define a bell crank lever plane, said bell crank lever being connected to a stationary part by a first film hinge secured to said bell-crank lever adjacent to said junction of said lever arms and defining a bending axis, a second such bell-crank lever connected to the stationary part by such a first hinge and having such lever arms which also in position of rest lie substantially in said plane, one of said lever arms of said first mentioned and second bell-crank levers being connected by a connecting film hinge; an oscillating arm secured to a free end of one of said lever arms and extending substantially parallel to the other of said lever arms, said oscillating arm being provided with a plurality of further film hinges which define bending axes and render said oscillating arm bendable in said plane, a second oscillating arm secured to a free end of the other lever arm of said second bell-crank lever, said oscillating arms having bearing bores mounted on a motor shaft which has two crank pins; and an oscillating beam substantially aligned with a drive shaft of a drive motor and secured to said other lever arm of said firstmentioned and second bell-crank levers by an additional film hinge defining a bending axis which extends at right angle to said plane, said oscillating beam being connected to the center of said connecting film hinge by said additional film hinge.

4,367,659

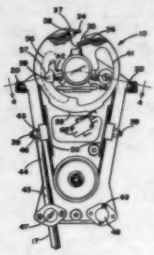
TWIN LEVER CONTROL ACTUATOR

Kerry Karpathian, Fond du Lac, Wis., and Darrell L. Trowbridge, Burnsville, Minn., assignors to Brunswick Corporation, Skokie, Ill.

Filed Jun. 30, 1980, Ser. No. 164,724
Int. Cl.³ F16C 1/10
U.S. Cl. 74—501 R 17 Claims

1. An actuator assembly for moving a core of a push-pull cable relative to a cable sheath comprising:
(A) a control body;
(B) a control arm pulley mounted for rotation on said control body;

(C) an idler pulley mounted for rotation on said control body;
(D) a pulley cable carried on rims of said pulleys;



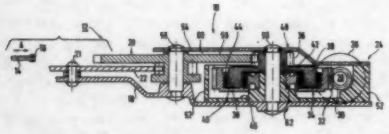
(E) an attachment means for attaching one end of the core of said push-pull cable to said pulley cable between said pulleys; and
(F) a support means to hold said end of said core parallel to a straight run of said pulley cable.

4,367,660

WINDOW LIFT DRIVE

Herbert Becker, Coburg; Gerhard Schelborn, Untersiemau, and Manfred Sünkel, Sonnefeld, all of Fed. Rep. of Germany, assignors to Metallwerk Max Brose GmbH & Co., Fed. Rep. of Germany

Filed Apr. 11, 1980, Ser. No. 139,420
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1979, 2915669
Int. Cl.³ F16H *1/16, 1/20*
U.S. Cl. 74—625 **21 Claims**



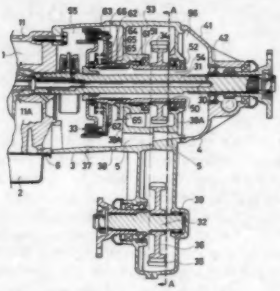
1. An electrical window lift drive especially for use in a motor vehicle, comprising:
a drive housing;
an electrical motor attached to said housing and having a shaft extending into the interior of said housing;
a worm gear mounted on the motor shaft for rotation thereby;
a worm wheel mounted for independent rotation coaxially with respect to a first portion of a bearing shaft and on elongated stationary bearing surface means fixed to said housing and independent of said bearing shaft intermediate said shaft and said wheel, said worm wheel meshing with and being driven by said worm gear and said bearing shaft being supported in said housing on both sides of said worm wheel;
a drive member mounted coaxially with respect to a second portion of said bearing shaft; and
means intermediate said worm wheel and said drive member transferring rotary motion of said worm wheel to said drive member, said means including at least one arm attached to said drive member and extending radially outwardly therefrom, a protrusion at the distal end of said arm extending in an axial direction of the first portion of said bearing shaft, and at least one recess in said worm wheel engagedly receiving said protrusion, said recess including a lining of elastic material directly intermediate the engaging members.

4,367,661

TRANSMISSION FOR FOUR-WHEEL DRIVE VEHICLES

Shuzo Moroto, Handa; Goichi Matsumoto, Okazaki, and Yoichi Hayakawa, Toyoake, all of Japan, assignors to Aisin-Warner Kabushikikaisha, Aichi, Japan

Filed May 28, 1980, Ser. No. 153,962
Claims priority, application Japan, May 31, 1979, 54-73402[U]
Int. Cl.³ F16H *37/06, 57/02*
U.S. Cl. 74—665 GE **1 Claim**



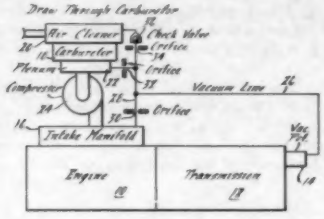
1. A transmission for a four-wheel drive vehicle having an engine, said transmission comprising:
a front transmission section including gear means and located adjacent said engine, said front transmission section having a front transmission section output shaft rotatable in connection with an engine output shaft;
a rear transmission section including a bearing supporting a first output shaft, said first output shaft directly engaging said front transmission section output shaft and supplying power to a first set of wheels;
a transfer section positioned between said front and rear transmission sections and including means for fluidly isolating said transfer section from said front and rear transmission sections, said transfer section further including a first sprocket, a second output shaft mounted off-axis relative to said front transmission section output shaft and supplying power to a second set of wheels, a second sprocket fixed to said second output shaft and chain means rotatably linking said first and second sprockets;
clutch means for selectively rotatably linking said first sprocket to said front transmission section output shaft;
means for actuating said clutch for simultaneously providing power to both sets of wheels;
casing means enclosing said front, rear and transfer sections, said casing means defining spaces in each said section;
a lubricating oil passage formed at least in part in said front transmission section output shaft, said oil passage extending through said front, rear and transfer sections, one end of said oil passage communicating with an oil pressure source in said front transmission section and the other end of said oil passage communicating with said space of said rear transmission section; and
a lubricating oil return passage formed in a portion of said casing means extending through said transfer section from said rear transmission section to said front transmission section, said oil return passage being in fluid isolation from said space of said transfer section, wherein one end of said oil return passage opens at the bottom of said rear transmission space and the other end of said oil return passage opens at a portion of said front transmission space which is lower than said one end of said oil return passage, whereby oil is returned by gravity through said oil return passage.

4,367,662

TRANSMISSION THROTTLE VALVE SYSTEM FOR SUPERCHARGED INTERNAL COMBUSTION ENGINES

Thomas L. Greene, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 20, 1980, Ser. No. 179,624
Int. Cl.³ B60K 41/16; F02B 33/00
U.S. Cl. 74—863 5 Claims



1. In an automatic power transmission for use with an internal combustion engine having an air intake manifold, a throttle controlled carburetor and a supercharger compressor in the gas flow path through said carburetor:

a vacuum modulator valve means for said transmission for developing an engine torque signal, said modulator valve means having a vacuum signal line;

a pressure line extending from said manifold to a location on the upstream side of said carburetor, a first calibrated orifice in said pressure line on one side of said vacuum signal line, a second calibrated orifice in said pressure line on the other side of said vacuum signal line; and

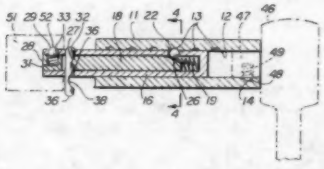
a check valve in said pressure line on said other side of said vacuum signal line adapted to accommodate flow toward said upstream location but preventing flow in the opposite direction.

4,367,663

VARIABLE LENGTH TORQUE ROD

Joseph S. Merics, 1537 Carol, Burlingame, Calif. 94010

Filed Mar. 30, 1981, Ser. No. 249,084
Int. Cl.³ B25G 1/04, 3/00
U.S. Cl. 81—177 A 7 Claims



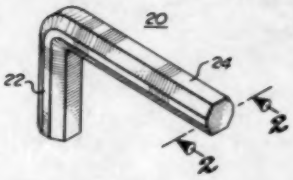
1. An adjustable length connection for use between a driver member and driven member comprising a hollow sleeve having a non-circular interior and an open second end, the interior of said sleeve being formed with a series of longitudinally spaced depressions, a hollow stem shaped to fit inside said sleeve with a sliding fit and having a closed first end inside said sleeve, a second end external to said sleeve shaped to receive the other of said members, and a first hole formed in the wall of said shank transverse to the axis of said stem spaced from said first end, and an aligned pair of second holes transverse to said axis external to said sleeve, an actuating pin slidable in said stem having a first end formed with a cam surface and a second end formed with a cam follower surface, a detent movable in said first hole, said actuating pin when retracted in said stem forcing said detent outward of said stem and into a selected one of said depressions, a cam pin slidable in said second holes formed with first and second cams engaged by said cam follower surface, said cams controlling the position of said actuating pin relative to said stem between retracted and projected positions.

4,367,664

COMBINATION TOOL

Leonid Ekshtut, 1520 16th Ave., Apt. #6, Seattle, Wash. 98122

Filed Feb. 2, 1981, Ser. No. 230,680
Int. Cl.³ B25B 15/00
U.S. Cl. 81—436 4 Claims



1. A drive tool insertable within both square and hexagonal shaped cavities of corresponding size, said drive tool comprising a shank portion which in cross section includes at least eight sides, with:

a pair of major sides disposed in spaced parallel relationship;

a pair of minor sides disposed in spaced parallel relationship in a direction substantially perpendicular to said major sides; and

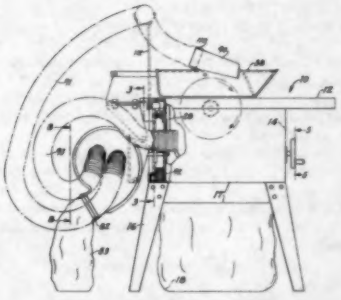
two pairs of intermediate sides extending diagonally from each end of said major sides at an included angle of approximately 120° to intersect an adjacent end of a corresponding minor side.

4,367,665

SAWDUST COLLECTION SYSTEM

Daniel A. Terpstra, Kirkwood, and Richard B. Brundage, Ladue, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 19, 1980, Ser. No. 217,950
Int. Cl.³ B27B 5/16, 5/29
U.S. Cl. 83—100 14 Claims



2. Sawdust collection apparatus for a belt driven table saw having a horizontal worktable, a saw blade, a hinged saw guard resting on said table, a base below the table having an open bottom and one open side and partially enclosing saw blade tilting and elevating mechanism, and a saw driving motor positioned outboard of the open side of said base and attached to said mechanism for movement with the saw blade; the apparatus including a collector bag detachably connected to and enclosing the open bottom of said base, means movable

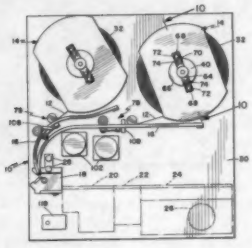
with said motor substantially closing the open side of said base, a centrifugal blower mounted outboard of said base and driven by said motor, said blower including a casing having two inlets and an outlet, a first flexible conduit connecting said saw guard with one of said inlets, a second flexible conduit connecting the interior of said base with the other of said inlets and a collector bag detachably connected to said outlet.

4,367,666

TICKET STOCK FEED AND SHEAR SYSTEM

John E. Toth, San Diego, Calif., assignor to Cubic Western Data, San Diego, Calif.

Filed Dec. 1, 1980, Ser. No. 211,028
Int. Cl.³ B26D *5/28*
U.S. Cl. 83—203 **2 Claims**



1. A system for cutting tickets from rolls of stock comprising:

a pair of reels each for carrying a roll of stock having a free end, and each including means for releasably clamping a core portion of the roll;

means for rotatably supporting each of the reels including means for providing a reverse rotational bias on each of the reels in a direction opposite to the direction of rotation required to unwind stock from the roll carried thereby;

a shear including a rotary blade and an opposing fixed blade defining a path therebetween for stock, the rotary blade cutting the stock upon rotation thereof without contacting the fixed blade;

first sensor means for detecting the presence of stock in the shear path;

a pair of ticket guide tracks each for directing the free end of the rolls from the reel carrying the roll to the path of the shear;

second sensor means for detecting the presence of stock along each of the guide tracks;

feed means for engaging and selectively propelling the free ends of the rolls along corresponding ones of the guide tracks through the path of the shear;

drive means for rotating the rotary blade to cut a portion representing a ticket from stock fed from either of the rolls; and

third sensor means for sensing the amount of rotation of the rotary blade to detect the completion of the cutting of a ticket.

4,367,667

FRENCH FRY CUTTER FOR FOOD PROCESSORS

Koichiro Shibata, Seto, Japan, assignor to Cuisinarts, Inc., Greenwich, Conn.

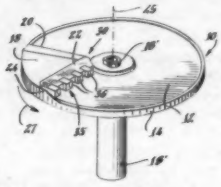
Filed Feb. 27, 1981, Ser. No. 238,974
Int. Cl.³ B26D *7/00*
U.S. Cl. 83—356.3 **16 Claims**

1. A French fry cutter tool for use in a food processor of the type having an upright working bowl with tool drive means extending into the bowl for rotating various removable food processing tools in said bowl, a removable cover for closing the bowl when in use, and a feed passage for introducing food material into the bowl, said French fry cutter tool having a hub removably engageable with said drive means to be rotated thereby in a predetermined direction of rotation about an axis with a disc-like member secured to the hub for rotation therewith, said disc-like member having an opening therein extending from a region near said hub to a region near the periphery of said disc-like member, said opening being further defined by an elevated portion of said disc-like member located behind said opening, the novel French fry cutter tool comprising:

a cutting structure formed by a sharpened continuous strip of blade metal bent to form alternating spaced, flat lower portions and spaced, flat upper portions, interconnected by upright, spaced, parallel portions,

said continuous blade strip having the general configuration of a sqaure wave with a sharpened leading edge,

said flat, lower portions of said continuous blade strip being mounted to the underside of said disc-like member near the front edge of said opening in said disc-like member,



said flat, upper portions of said continuous blade strip being mounted on said elevated portion of said disc-like member,

said upright, spaced, parallel portions forming a plurality of spaced parallel vertical blades positioned in said opening and spaced radially with respect to said axis of rotation,

said flat, upper portions of said continuous blade strip facing the direction of rotation of said disc forming a plurality of horizontally aligned blades which are elevated above the level of the top surface of said disc-like member, and

horizontal blade means elevated above the level of said disc-like member for horizontally cutting the regions of food between said flat upper portions,

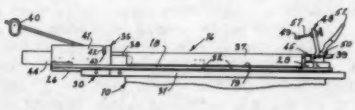
whereby said blades in cooperation with the sharp leading edges of said elevated flat portions and said horizontal blade means produce French fry cuts from food items fed onto the rotating tool.

4,367,668

CIRCULAR SAW ATTACHMENT

Joseph D. Jensen, Spokane, Wash. 99203

Filed Dec. 22, 1980, Ser. No. 218,630
Int. Cl.³ B27B *25/08, 27/06*
U.S. Cl. 83—415 **20 Claims**



1. A cut-off attachment for use in combination with a stationary saw table having an upwardly projecting circular saw blade, said cut-off attachment being especially designed for the cutting of small workpieces and comprising:

a saw-top plate mounted to move over the table in guided, longitudinal fashion, and having a longitudinally extending, saw blade receiving slot of essentially saw blade width, through which the saw blade projects;

a blade guard and workpiece holddown means arranged to

completely cover and closely surround the projecting portion of the saw blade while the saw-top plate is moved with respect to the saw blade when workpieces are being cut and while the workpieces are being placed on or removed from the saw-top plate between cuts, said blade guard and workpiece holddown means including a fixed portion surrounding the exposed portion of the saw blade when the saw-top plate is in its rearmost position with respect to the saw table and a movable, vertically floating portion comprising a workpiece engaging portion and including top and side wall means the lower edges of which are engageable with the saw top plate or with workpieces thereon along lines closely alongside and parallel to the saw blade receiving slot throughout the extent of travel of the slot relative to the saw blade during cutting, such engagement being maintained during cutting essentially only by the weight of the movable, vertically floating portion of the blade guard and workpiece holddown means; and

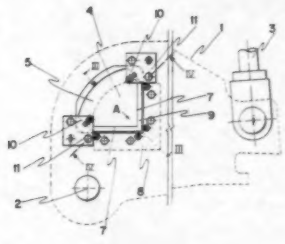
cut-off guide means on the saw-top plate at the rear end thereof and extending to opposite sides of the blade.

4,367,669

DEVICE FOR CUTTING ANGULAR PROFILES APPLICABLE TO HYDRAULIC SHEARS

Jose A. Lopetegui Legorburu, Guipuzcoa, Spain, assignor to Maquinaria Geka, S.L., Oyarzun, Spain

Filed Dec. 4, 1980, Ser. No. 213,152
Claims priority, application Spain, Apr. 7, 1980, 249,858
Int. Cl.³ B23D *15/04, 23/00*
U.S. Cl. 83—579 **2 Claims**



1. A device for use with hydraulic shears for cutting a member having an angular transverse cross-sectional configuration without deformation or loss of material of such member, said device comprising:

a knife bearer plate adapted to be mounted on a shaft for partial reciprocating angular movement thereabout by means of a hydraulic pressure cylinder, said knife bearer plate having in a front surface thereof a curved recess; and

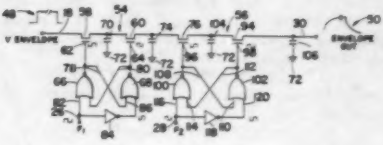
a knife plate of generally triangular shape and including two sides as cutting edges forming a dihedral and a curved third side, said knife plate having extending from a rear surface thereof, at a position adjacent said curved third side, a curved prismatic projection, the curve of said third side and the curve of said projection being complementary to the curve of said recess in said knife bearer plate, and said projection being fitted into said recess, thereby enabling relative movement between said knife plate and said knife bearer plate along said complementary curves, said cutting edges extending parallel to respective cutting edges of a counterknife.

4,367,670

ENVELOPE GENERATOR EMPLOYING DUAL CHARGE PUMP

Stephen L. Howell, Huntingburg, and Ralph N. Dietrich, Georgetown, both of Ind., assignors to Kimball International, Inc., Jasper, Ind.

Filed Jun. 18, 1981, Ser. No. 274,881
Int. Cl.³ G10H *1/057*
U.S. Cl. 84—1.26 **23 Claims**



1. In an electronic musical instrument having means for generating tones in response to the actuation of a keyboard, an envelope generator for controlling the attack and decay of the tones comprising:

a source of input voltage connected to an input of the envelope generator,

an output,

a first charge pump comprising means for incrementally transferring the input voltage to a first capacitor over a first sequence of discrete time frames, said charge pump comprising a first electronic switch device interposed between said input and said first capacitor, and clock means for switching said electronic switch device on and off at a first frequency, and

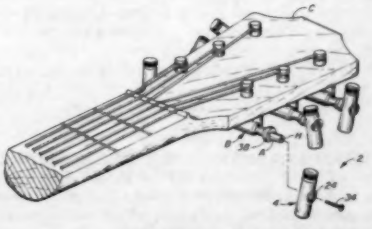
a second charge pump comprising means for incrementally transferring the voltage on said first capacitor to a second capacitor over a second sequence of discrete time frames, said second charge pump being connected in series between said first charge pump and said output, said second charge pump comprising a second electronic switch device, and said clock means switches said second electronic switch device on and off at a second frequency at least twice as high as said first frequency.

4,367,671

CLUTCHED TUNING PEG HANDLE

Slim Chance, 100 Eldridge St., Mill Valley, Calif. 94941, and William T. Gray, 19612 Grandview Dr., Topanga, Calif. 90290

Filed Sep. 8, 1980, Ser. No. 184,702
Int. Cl.³ G10D *3/14*
U.S. Cl. 84—306 **12 Claims**



1. A handle for mounting on the rotatable drive shaft of a tuning peg assembly on a stringed musical instrument, such as a guitar, comprising:

an elongate body having a longitudinal axis; and

means for mounting said body to said drive shaft transverse

to said longitudinal axis, said mounting means including adjustable slip clutch means for applying a chosen torque to said drive shaft by said elongate body so that when said chosen torque is applied to the drive shaft said slip clutch means allows said body to generally free wheel about the drive shaft thereby providing a predetermined tension on the string.

4,367,672

AUXILIARY POWER STEERING, ESPECIALLY FOR MOTOR VEHICLES

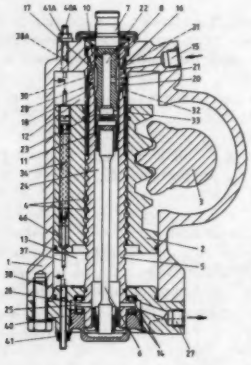
Dieter Elser, Essingen-Lauterburg, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG, Friedrichshafen, Fed. Rep. of Germany

Filed Jul. 28, 1980, Ser. No. 172,551

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1979, 2930498

Int. Cl.³ F15B *15/22, 9/10*

U.S. Cl. 91—375 A **6 Claims**



1. In an auxiliary power steering device having a steering gear housing (1) enclosing an operating piston and opposing pressure chambers (12 and 13) to which the piston is exposed and to which pressurized fluid is supplied and exhausted under control of a steering control valve means, and mechanically actuated bypass valve means (36, 36A) mounted within two axial bores (34, 34A) formed in the piston for depressurizing an active one of the opposing chambers in response to arrival of the piston at one of two limit positions, the improvement residing in said bypass valve means including a pair of valve elements and control means associated with each of the valve elements wherein each valve element is rendered operative for limiting travel of the piston by opening thereof to depressurize said one of the opposing pressure chambers only when the piston arrives at one of the travel limit positions thereof in one direction of piston travel and to limit pressure by opening thereof in response to excessive pressure within the active one of the opposing chambers during travel of the piston in the other direction of piston travel to the remaining travel limit position.

4,367,673

SYSTEM AND METHOD FOR CONTROLLING THE ELEVATION OF A BOOM HOIST DEVICE

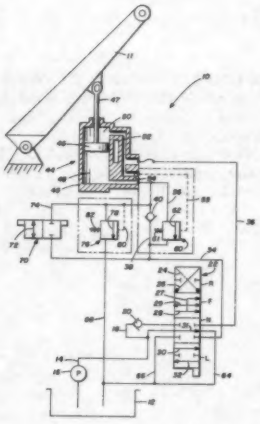
John F. Krueck, Mansfield; Donald G. Braden, Galion, and William J. Askins, Lexington, all of Ohio, assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 9, 1981, Ser. No. 223,870

Int. Cl.³ F15B *11/08*

U.S. Cl. 91—437 **1 Claim**

1. A multi-purpose lifting vehicle having a boom hoist device which can be selectively used in a crane mode of operation or in a front end loader mode of operation, hydraulic cylinder means operably connected to the boom hoist device, and a hydraulic system for delivering hydraulic fluid to the hydraulic cylinder means, said hydraulic system comprising a sump serving as a source of hydraulic fluid; a mode selector valve having first, second, and third operating positions, pump means communicating with said sump for delivering hydraulic fluid from the sump to said selector valve, means defining a first flow path for returning hydraulic fluid to the sump from the selector valve, means defining a second flow path, including a one-way flow valve, for delivering hydraulic fluid from the selector valve to the raising end of said cylinder means and a first normally closed valve, which when placed in an open position, provides a first by-pass path about said one-way flow valve, means defining a third flow-path providing fluid communication between the selector valve and the lowering end of said cylinder means, and means defining a fourth flow-path including a second normally closed valve, which when placed in an open position, provides a second by-pass path about said one-way flow valve, said fourth flow-path providing fluid communication between said raising and lowering ends of said



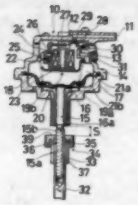
cylinder means through said selector valve, whereby when the control valve is in its first operating position it provides communication between, on the other hand, said pump means and said second flow-path, and, on the other hand, said third flow-path and said first flow-path to deliver fluid to the raising end of the cylinder means and to permit fluid to leave the lowering end of the cylinder means to raise the boom hoist device, and the one-way flow valve prevents reverse flow of fluid from the raising end of the cylinder means, whereas when the control valve is in its second operating position and said first normally closed valve is open communication is provided between, on the one hand, the raising end of the cylinder means and said first flow-path and, on the other hand, said pump means and the third flow-path to deliver fluid to the lowering end of the cylinder means and permit fluid to leave the raising end of the cylinder means to lower the boom hoist device and when said selector valve is in its third operating position and said second normally closed valve is open fluid communication is provided through said selector valve and said second normally closed valve between said raising and lowering ends of said cylinder means.

4,367,674

ACTUATOR DEVICE

Masami Inada, and Kongou Aoki, both of Kariya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 22, 1980, Ser. No. 123,516
Claims priority, application Japan, Feb. 23, 1979, 54-23425[U]
Int. Cl.³ F01B 19/00
U.S. Cl. 92—13.2 4 Claims



1. An actuator device for use with an engine-idle control system of an automobile provided with an air-conditioner, said actuator device comprising:

an actuator housing;

a guide member disposed within said housing;

diaphragm means positioned within said housing to thereby define two chambers within said housing;

a plunger member secured to said diaphragm means and extending out from said housing, said plunger member being slidably supported by said guide member and having a threaded portion formed thereon; and

adjusting means mounted on said plunger member and threadedly connected to said threaded portion formed on said plunger member for adjusting the stroke of said plunger member wherein said adjusting means further comprises;

a hub portion;

a nut member engaging said threaded portion of said plunger member and which is positioned within said hub portion;

an operating rod engaging said plunger member;

a lock nut interconnecting said rod and said plunger member and which includes a hexagonal external face; and

a plurality of extending members which axially extend from said hub portion, wherein said hub portion further comprises a ring shaped peripheral portion having a knurled periphery, said plurality of said extending members elastically contacting said hexagonal external face of said lock nut and said hub portion including a stopping flange portion which contacts said guide member upon shifting of said adjusting means.

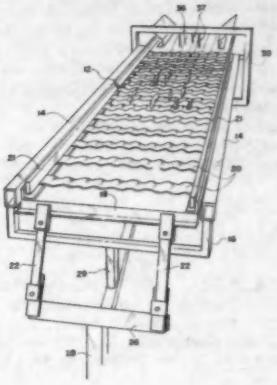
4,367,675

DEVICE FOR ORIENTING AND TOPPING TAPERED VEGETABLES

Gordon C. Boots, Orlando, Fla., assignor to A. Duda & Sons, Inc., Oviedo, Fla.

Filed Nov. 24, 1980, Ser. No. 209,771
Int. Cl.³ A23N 15/04
U.S. Cl. 99—546 10 Claims

1. A machine for effecting an orientation of carrots or other elongate, tapered vegetables placed thereon, said machine comprising a vibratory table of elongate configuration, with one end of said table being somewhat higher than the other, the upper surface of said table being principally constituted by a plurality of generally parallel, corrugated members spaced along the longitudinal centerline of the table, with the spacing between the members increasing incrementally such that the minimum spacing between members exists at said one end of the table, and the maximum spacing between members exists at the other end, the corrugations of said members being longitudinally aligned and serving as alignment means for bringing about an alignment of vegetables deposited adjacent said one end of said table, such that elongate vegetables individually aligned with the longitudinal axis of the table can travel for a portion of the length of the table, bridging at least some of the spaces between corrugated members, at least two leaf springs being utilized at each end of said table to provide a substantial degree of freedom and mobility to said table, vibration-producing means connected to said vibratory table for inducing sufficient vibration into said corrugated members as to cause the



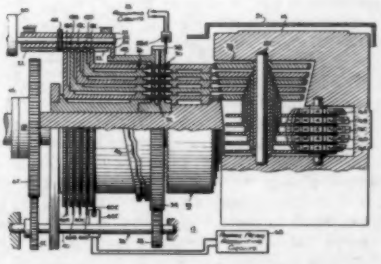
elongate vegetables to travel toward said other end of the table until such time as each vegetable has reached a space between two corrugated members that it is unable to bridge, at which time it falls crown end first between such pair of members, chute means for receiving the vegetables and directly delivering same to a topping device, said topping device functioning to rapidly and consistently sever the crowns from the vegetables.

4,367,676

POSTAGE METER VALUE SELECTING SYSTEM

John I. Clark, Milford, Conn., assignor to Pitney Bowes, Inc., Stamford, Conn.

Filed May 22, 1981, Ser. No. 266,561
Int. Cl.³ B41J 1/20
U.S. Cl. 101—91 18 Claims



1. A postage meter of the type adapted to print selected value amounts on a print receiving surface, comprising:

a rotary print drum;

value print means supported within said print drum, said value print means having a plurality of value print elements adapted to be moveably positioned within said print head and further positioned such that each of said plurality of value print elements can be selectively moved into a

position to project from the surface of said rotary print drum;

drive means coupled to said print drum for driving said print drum to rotate such that a selected value print element projecting from the surface of said rotary print drum is moved through a position where the selected print element is adapted to imprint on the print receiving surface;

selection means coupled to said value print means for moving said plurality of print elements to position a selected one of said plurality of print elements to project from the surface of said rotary head, said selection means operable to selectively move said plurality of print elements when (1) said drive means is operating to drive said print drum to rotate, (2) when said drive is not operating to drive said print drum to rotate; and

accounting means operatively coupled to monitor the position of said print drum and said value print means for accounting for the imprinting of a selected unit value amount.

4,367,677

ELECTROMAGNETIC WIRE PRINTER

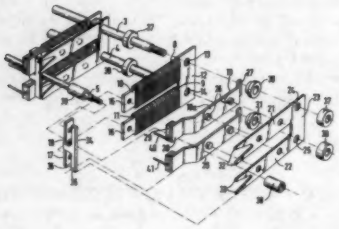
Klaus H. Mielke, Radavägen 82, S-435 00 Mölnlycke, Sweden

Continuation of Ser. No. 50,059, Jun. 19, 1979, Pat. No. 4,302,114. This application May 22, 1981, Ser. No. 266,604

Claims priority, application Sweden, Jun. 19, 1978, 7806984

Int. Cl.³ B41J *3/12*

U.S. Cl. 101—124 **10 Claims**



1. In a wire printer of the type comprising a group of substantially straight and substantially parallel printing wires, means for guiding the printing ends of said wires for longitudinal movement towards and away from a printing station, a group of electromagnets comprising one electromagnet for each of said printing wires, means for supporting said electromagnets in a row extending along said group of printing wires, each of said electromagnets comprising a core extending at right angles to the printing wires and having a front end adjacent to said group of printing wires and a rear end remote from said group of printing wires, a winding on said core, an armature extending along said core, means for pivotally connecting said armature to the rear end of said core, a biasing spring tending to move the armature away from the front end of the core, and means for connecting the front end of the armature to the rear end of a corresponding one of said printing wires for imparting said longitudinal movement thereto,

the improvement characterized in that each of said cores consists of a substantially plane and substantially straight strip the plane of which and the longitudinal axis of which form right angles with the plane of the printing wires, and

that each of said armatures consists of a strip having a flat main portion, a rear portion magnetically connected to the rear end of the core strip, and a front portion offset towards the core to form a pole face separated from the front end of the core by an air gap.

4,367,678

OFFSET PRINTING MACHINE DIFFERENTIAL SPEED INKING SYSTEM

Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

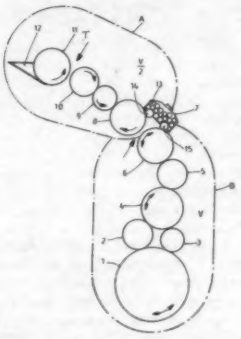
Filed Sep. 12, 1980, Ser. No. 186,439

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1979, 2942733

The portion of the term of this patent subsequent to Mar. 16, 1999, has been disclaimed.

Int. Cl.³ B41F *31/10*

U.S. Cl. 101—350 **10 Claims**



1. In a rotary offset printing machine comprising a plate cylinder (1),

an inking system having

an ink supply means (12);

a duct roller (11) in ink receiving relation to the ink supply means;

a plurality of ink distribution and transfer rollers (3–6; 8, 9, 10) forming an ink roller train and positioned in mutually ink-transferring relation, located between the ink duct roller and the plate cylinder,

and wherein,

the ink distribution and transfer rollers are divided into two groups (A,B) positioned adjacent each other in the direction of ink transfer, the rollers (8, 9) of one of the groups (A) being driven at a circumferential speed which is substantially less than the speed of the rollers (2-6) of the other group (B);

wherein a gap is placed between a terminal roller (8) of one group (A) and a terminal roller (6) of the other group (B) which is adjacent the terminal roller (8) of the first group (A) and is in ink transferring relation thereto, to separate adjacent rollers of the two groups rotating at said substantially different speeds,

said gap being wider than the thickness of ink film being transferred;

and wherein a bridging element (7) is provided comprising a cage-like holder (7),

two rollers (14,15) projecting from said cage-like holder in surface contact with the respective terminal rollers (8, 6) of said two groups (A, B) of distribution and transfer rollers,

and a plurality of roller elements (13) in said cage-like holder having circular cross section and ink-receiving surfaces, said roller elements (13) being loosely placed in centerless floating arrangement, randomly positioned horizontally and vertically adjacent each other and selectively adjacent the two rollers (14,15) projecting from said cage-like holder, said cage-like holder being positioned to span said gap between the terminal rollers (6, 8) of said groups,

rotation of the respective terminal distribution and transfer roller of the respective group rotating the respective

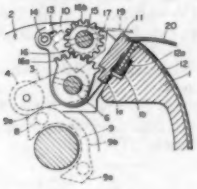
projecting roller (14, 15) in the cageroller elements (13) retained therein.

4,367,679

PACKING SHEET OVERLAYING DEVICE FOR OFFSET PRINTING MACHINE

Koji Ishii, Fuchu, and Taro Goto, Hiroshima, both of Japan, assignors to Ryobi, Ltd., Hiroshima, Japan

Filed Jan. 5, 1981, Ser. No. 222,795
Claims priority, application Japan, Jan. 8, 1980, 55/941[U]
Int. Cl.³ B41F 21/04
U.S. Cl. 101—410 5 Claims



1. A packing sheet overlaying device for an offset printing machine comprising:

a printing machine cylinder;

a cam lever shaft provided parallel to a longitudinal opening in said printing machine cylinder;

a cam lever provided at one end of said cam lever shaft, said cam lever shaft being turned by said cam lever, said cam lever having a cam follower;

a fixed cam having cam surfaces of different levels, said cam follower being maintained in contact with said fixed cam;

a gripper shaft provided with a gripper, brackets securing said gripper, a gripper holder, and a gripper base adapted to clamp a printing sheet between said gripper and said gripper base, said cam lever shaft and said gripper shaft being rotatably supported by said brackets and being arranged parallel to each other;

a gear-transmission mechanism for coupling said cam lever shaft and said gripper shaft so that said cam lever shaft and said gripper shaft are rotated relative to each other;

said cylinder having an opening edge in which a locking groove is formed confronting said gripper base so that one end of a packing sheet is detachably lockable in said locking groove; and

a bolt for tightening said brackets to and releasing said brackets from said cylinder, said bolt passing through a slot formed in one of said brackets extending in the direction of rotation of said brackets, said brackets when released being movable between a clamping and a non-clamping position within a range defined by said slot, said gripper base being in close proximity of said packing sheet when said brackets are in said clamping position and said gripper base being displaced from said packing sheet when said brackets are in said non-clamping position.

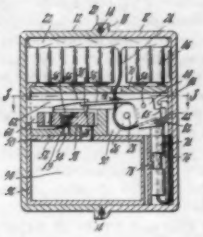
4,367,680

STANDOFF MUNITION

William H. Hart, 85 Dudley Rd., Newton Center, Mass. 02159, assignor to William Howard Hart, Newton Center, Mass.

Filed Oct. 31, 1963, Ser. No. 320,288
Int. Cl.³ F42B 25/02
U.S. Cl. 102—387 9 Claims

1. A standoff munition comprising a removable outer case in which a pair of symmetrical cover elements with a gasket therebetween are held in place by at least one shear pin, an explosive container disposed within said case, a fuze container disposed within said case and on said explosive container, a multiplicity of elongated beads disposed in side-by-side relation above said fuze container and alongside said fuze container, a folded parachute disposed on said beads above said fuze container, a detonator holder, bore lock safety, firing pin lever, and pulley disposed in said fuze container, said beads, parachute, and bore lock safety being held against movement away from the rest of said munition only be said case and a stop resisting movement of the innermost bead, said detonator holder being pivotally mounted to bring a detonator therein beneath a firing pin carried by said firing pin lever upon withdrawal of said bore lock safety, said firing pin lever being pivotally mounted about an axis in said fuze container and carrying a cord-supporting pin on one side of said axis and being provided with a one-way hole on the other side of said



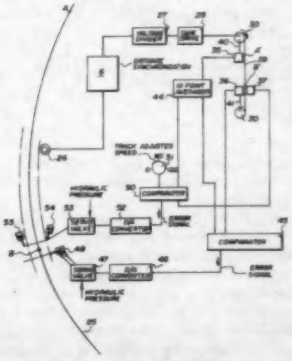
axis, said pulley being rotatable about a second axis therebetween, said innermost bead extending upwardly into said fuze container and including a first shoulder for upwardly urging said cord-supporting pin, a second shoulder cooperating with a stop to limit movement away from the rest of said munition, and a third shoulder cooperating with an edge of said firing pin lever to jam the same against rotation in the event said innermost bead moves downwardly only slightly, and said cord, extending from said parachute down through said one-way hole, over said pulley, over said cord-supporting pin, through said innermost bead, and through the remainder of said beads successively.

4,367,681

DYNAMIC LOADING CORRECTING DEVICE

John K. Stewart, Lexington, S.C.; Charles A. Shupe, Beaconsfield, Canada, and Helmuth von Beckmann, Columbia, S.C., assignors to Canron Corp., West Columbia, S.C.

Continuation of Ser. No. 956,600, Nov. 1, 1978, abandoned. This application Jan. 11, 1982, Ser. No. 338,655
Int. Cl.³ E01B 29/04
U.S. Cl. 104—7 B 10 Claims



1. A method of correcting railroad track comprising obtaining a first record on a recording medium representing the actual geometric condition of at least one parameter of a length

of track under speed and axle loading conditions similar to expected speed and axle loading conditions when the track is in normal operation, reading the record in a track correction vehicle moving along the track and at a speed corresponding to the speed of the track correction vehicle, the reading of the record being at a rate such that the part of the record being read at any given instant is the record for the track at the position of the track correction vehicle on the track at that instant, and deriving from the record electrical error signals indicative of the difference between the actual geometric condition and the desired geometric condition and using the error signals to control track moving means on the track correction vehicle in a direction to reduce the difference.

9. A track correction vehicle for correcting at least one parameter of a length of track, comprising a record reading system adapted to read a first record on a recording medium representing the actual geometric conditions of at least one parameter of a length of track, the record reading system having record drive means synchronized with the vehicle speed, an upstream and a downstream read head mutually spaced a predetermined distance along the direction of travel of the recording medium which distance corresponds to a predetermined length of track, means for sampling at both heads the alignment record at predetermined intervals, the upstream read head having an output connected to an averaging circuit which derives at an output thereof a running average of a plurality of samples; and a comparator to which the output of the averaging circuit and an output of the downstream read head are connected to and which derives electrical error signals indicative of the difference between the actual geometric conditions and the desired geometric conditions and the desired geometric condition are derived, and track moving means operable under control of the electrical error signals to move the track in a direction to reduce the difference.

4,367,682

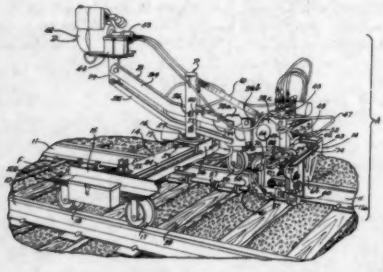
RAIL ANCHOR DRIVE MACHINE

Max Freilich, Ashtabula, and Ramesh C. Gulati, Mentor, both of Ohio, assignors to True Temper Corporation, Cleveland, Ohio

Filed Oct. 15, 1980, Ser. No. 197,014

Int. Cl.³ E01B *29/32*

U.S. Cl. 104—17 A **29 Claims**



25. A rail anchor driving machine comprising:

a wheeled frame adapted to be moved along a railroad track having two rails,

a vertical centerpost rotatably about its vertical axis and slidably mounted on said wheeled frame for linear movement from one end of the frame adjacent one rail to the other end of the frame adjacent the other rail,

a balance arm operatively pivoted intermediate its ends to said centerpost for predetermined vertical movement about its pivot relative to the frame,

an anchor drive mechanism disposed at or adjacent one end of the balance arm,

and anchor drive mechanism drive means disposed adjacent the other end of the balance arm whereby the anchor drive mechanism may be operatively positioned on either of the two rails when the wheeled frame is disposed at a preselected position on the track and without removing the frame from the track, said rail anchor drive mechanism comprising;

a back frame,

a pair of coacting anchor clamp housing side plates vertically pivoted to said back frame for hinged movement toward and away from each other in a horizontal plane,

a single hydraulic boxing piston-cylinder mechanism pivotally secured to said side plates for

selectively moving the plates about their back frame pivots and toward each other to box two associated coacting anchors against an associated cross-tie,

a pair of coacting anchor drive arms pivoted intermediate their ends to said side plates, and a single anchor drive hydraulic piston-cylinder mechanism operatively pivoted to said back frame

and to the upper end of said drive arms to drive the pivot arms about their side plate pivot points and cause the lower end of the drive arms to drive the two boxed anchors into final operative position on an associated rail base flange.

4,367,683

DRIVELESS VEHICLE WITH SPEED CONTROL

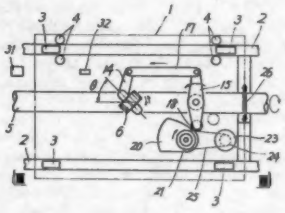
Kinjiro Tokunaga, Chiba, Japan, assignor to SI Handling Systems, Inc., Easton, Pa.

Filed Dec. 18, 1980, Ser. No. 217,861

Claims priority, application Japan, Dec. 18, 1979, 54-175692[U]

Int. Cl.³ B61B *13/12*

U.S. Cl. 104—166 **5 Claims**



1. A driverless vehicle comprising a frame having support wheels for riding on a track, at least one drive wheel on the frame for frictional contact with a drive shaft, said drive wheel being supported for movement between a drive position and an accumulation position, the improvement comprising a motor driven cam on said frame, and means on the frame for coupling the cam to the drive wheel whereby the drive wheel is moved between said positions by said cam.

4,367,684

SAFE HAVING LATERALLY RETRACTABLE SWING DOOR WINGS

Hans Jucker, Horgen, Switzerland, assignor to Tell-Kassenfabrik und-Tresorbau, Brack & Peter, Inh. Jucker & Co., Switzerland

Filed Aug. 13, 1981, Ser. No. 292,491

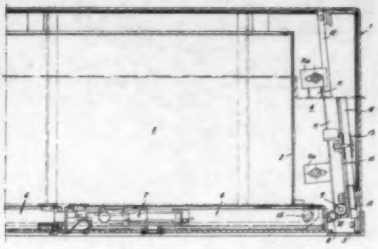
Claims priority, application Switzerland, Sep. 4, 1980, 6645/80

Int. Cl.³ E05D *15/56*

U.S. Cl. 109—70 **7 Claims**

1. An improved safe of the type having a case defining an enclosed volume and a door opening opened to the volume, wall means for dividing the volume into a useful space and a retraction space laterally adjacent to the useful space, and at least one door wing, wherein the door wing is laterally swingable out of the door opening and concurrently retractable into

the retraction space, comprising, a supporting column, hinge means swingably mounting the door wing to the supporting column, a guide roller mounted proximate the retraction space for rotation in engagement with the door wing, a guide rail extending obliquely inwardly through the retraction space from the plane of the door opening, an elongated supporting plate fixedly mounted to said supporting column, a first roller and a second roller mounted to said supporting plate at horizontally and vertically offset positions and engaged to said guide rail for rotation therealong, and said supporting column being movable along said guide rail so that to open the safe, the door wing is pivoted from its closed position in the door opening plane about the hinge access of said hinge means and is simultaneously shifted on and turned about said guide roller through ninety degrees and moved into an open position in which an edge of the door wing is flush with the door opening plane.

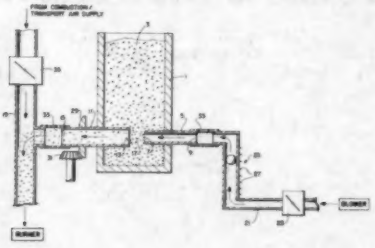


4,367,685

PROCESS AND APPARATUS FOR PRECISELY METERING QUANTITIES OF GRANULAR OR PULVERULENT SOLIDS

Scott W. Frame, 413 Knox Ave., Anniston, Ala. 36201, and David P. Frame, 217 S. Ellis St., Salisbury, N.C. 28144

Filed Sep. 8, 1980, Ser. No. 185,388
Int. Cl.³ F23D *1/00;* B65G *53/50;* F23K *3/02*
U.S. Cl. 110—347 17 Claims



1. An apparatus for precisely metering quantities of granular or pulverulent solid fuel to a burner to achieve stoichometric combustion of the fuel at the burner, said apparatus comprising:

a supply container means for containing therein a supply of granular or pulverulent solid fuel material;

an air supply conduit extending into said supply container means, said air supply conduit having an outlet end at a position within said supply container means to be embedded within said solid fuel material, and said air supply conduit having an inlet end;

a fuel outlet conduit extending into said supply container means, said fuel outlet conduit having an inlet end at a position within said supply container means to be embedded within said solid fuel material, and said fuel outlet conduit having an outlet end positioned outwardly of said supply container means;

said outlet end of said air supply conduit and said inlet end of said fuel outlet conduit being separated from each other by a space and confronting each other at locations within said supply container means;

transport conduit means, connected to said outlet end of said fuel outlet conduit and having means for connecting said transport conduit means to a burner, for transporting to the burner a feed flow and entrained particles;

said fuel outlet conduit extending substantially horizontally from said inlet end thereof at said space to said outlet end thereof connected to said transport conduit means;

air supply means, connected to said inlet end of said air supply conduit, for supplying a feed flow of air through said air supply conduit and outwardly through said outlet end thereof, for entraining and blowing particles of said solid fuel material positioned in said space into said inlet end of said fuel outlet conduit, and for discharging said feed flow and entrained particles from said outlet end of said fuel outlet conduit into said transport conduit means;

combustion air supply means, connected to said transport conduit means, for supplying to the burner through said transport conduit means combustion air, and thereby for conveying said feed flow and entrained particles through said transport conduit means to the burner; and

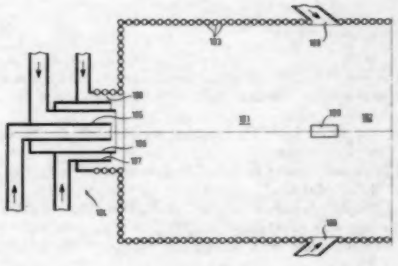
said air supply means comprising means for supplying less than 2% of the quantity of air required for stoichometric combustion of said particles of solid fuel material at the burner, and said combustion air supply means comprising means for supplying the remainder of air required for such stoichometric combustion.

4,367,686

METHOD FOR OPERATING A COAL DUST FURNACE AND A FURNACE FOR CARRYING OUT THE METHOD

Fritz Adrian, Ratingen, Fed. Rep. of Germany, assignor to Steag Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Mar. 25, 1981, Ser. No. 247,319
Int. Cl.³ F23K *5/00*
U.S. Cl. 110—347 6 Claims



1. A method for operating a coal dust furnace with reduced formation of nitrogen oxides, comprising the steps of:

blowing into the furnace a mixture of air and combustion coal dust having a specified range of grain sizes, the range of grain sizes having an upper limiting grain size,

blowing into the furnace a swirling stream of combustion air surrounding said mixture;

blowing into the furnace a mixture of combustion air and temperature reducing coal dust surrounding said swirling stream of combustion air, the range of grain sizes of the additional coal dust lying essentially above said upper limiting grain size;

blowing into the furnace a non-swirling stream of combus-

tion air surrounding said mixture of air and temperature reducing coal dust,

and burning said temperature reducing coal dust in an afterburning area of the furnace.

4. A method for operating a coal dust furnace with reduced formation of nitrogen oxides, comprising the steps of:

blowing into the furnace a mixture of air and temperature reducing coal dust,

blowing into the furnace a non-swirling stream of combustion air surrounding said mixture of air and temperature reducing coal dust,

blowing into the furnace a mixture of air and combustion coal dust having a specified range of grain sizes, the range of grain sizes having an upper limiting grain size and the mixture surrounding said non-swirling stream of combustion air,

blowing into the furnace a stream of combustion air surrounding said mixture of air and combustion coal dust,

the range of grain sizes of the temperature reducing coal dust lying essentially above said upper limiting grain size and burning said temperature reducing coal dust in an afterburning area of the furnace.

4,367,687

WORKTABLE FOR SEWING MACHINES

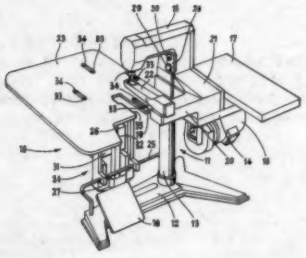
Roberto Sanvito, Milan, Italy, assignor to Rockwell-Rimoldi, S.p.A., Italy

Filed May 29, 1981, Ser. No. 268,606

Claims priority, application Italy, Jun. 12, 1980, 22033/80[U]

Int. Cl.³ D05B 75/00; A47B 29/00

U.S. Cl. 112—217.1 **3 Claims**



1. A worktable for a sewing unit of the type having a sewing machine with a free-arm type base mounted on a support bench, said worktable comprising:

(a) a support shaft (26) mounted for vertical movement on the support bench;

(b) a planar support surface (23) attached to the upper end of said support shaft;

(c) means operatively connected to said support shaft for selectively raising and lowering said support surface to and from operative association with the sewing machine base; and

(d) means interconnecting said support shaft (26) and support surface (23) for selectively moving the latter a limited horizontal distance parallel with the longitudinal axis of the sewing machine base.

4,367,688

SAILBOAT RIG

Thomas B. A. Godfrey, Coombs Neck, Vinalhaven, Me. 04863

Filed Dec. 12, 1980, Ser. No. 215,652

Int. Cl.³ B63H 9/04

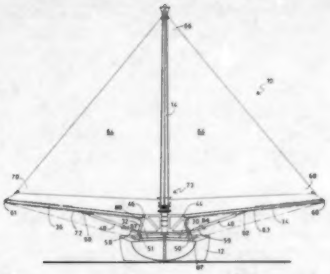
U.S. Cl. 114—39 **19 Claims**

1. In a sailboat having a rotatable mast, in combination,

twin booms pivotally connected to the lower part of the mast so as to swing independent of mast rotation in a horizontal plane together to the same side of the boat or separately to opposite sides of the boat, and

a single, generally triangular sail passed around the mast and adapted to be rolled up thereon or unrolled therefrom when the mast rotates with one corner of the triangle comprising the head of the sail, the other two corners comprising the clews, and the base of the sail, where it passes about the mast, comprising the tack, the tack being releasably attached to the mast,

said clews being adapted for outhauling one on each boom when said mast rotates in its unrolling direction whereby



when said booms are together and said sail sections outhauled along their respective booms, one-half the unrolled said area is exposed to the wind to provide an efficient air foil leading edge at the mast for conventional sailing, when said booms are separated, the entire unrolled sail area is exposed to the wind for running and reaching, and when said booms are separated, said sail is fully unrolled, and said tack is released from said mast, the full area of the sail is exposed to the wind, as an unbroken air foil, separated from and without interference from the leading edge of the mast, for running and reaching.

4,367,689

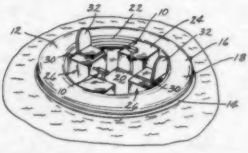
WATER RECREATIONAL VEHICLE

Leonard J. Lukehart, and Vernon H. Sietmann, both of Laurel, Iowa 50141

Filed Aug. 27, 1980, Ser. No. 181,868

Int. Cl.³ B63B 35/72

U.S. Cl. 114—346 **1 Claim**



1. A water recreational vehicle comprising:

a floatable circular tube having a geometric centerpoint defining a center axis, a longitudinal axis, and a lateral axis,

a rigid housing shell mounted on said tube,

two hand controlled battery powered outboard motors mounted within said rigid housing and being symmetrically positioned on opposite sides of said centerpoint on said lateral axis,

two oppositely facing seats mounted within said rigid housing and being symmetrically positioned on opposite sides of said centerpoint on said longitudinal axis,

clamp means mounting said motors to said housing and

permitting rotation of said motors about a vertical axis in either a clockwise or counterclockwise direction,

a control means on each of said motors to permit selective control of the speed of said propellers and the direction of rotation of said propellers,

said tube being free from protrusions on its outer perimeter to permit easy rotation thereof about said axis when in a floating condition by causing one propeller to rotate in a clockwise direction and causing the other propeller to rotate in a counterclockwise direction.

4,367,690

HEATED ROLLER TYPE FIXING APPARATUS

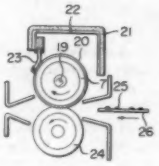
Hirofumi Sakaguchi; Ken-ichi Matsumoto, and Keiji Masuda, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Jan. 21, 1981, Ser. No. 226,735

Claims priority, application Japan, Jan. 21, 1980, 55/5630[U]

Int. Cl.³ G03G *15/20*

U.S. Cl. 118—60 **1 Claim**



1. In a fixing apparatus operable for substantially permanently affixing a toner image to a sheet, and including a first rotatable roller having a heat source therein for heating the peripheral surface of the roller, a cleaning blade disposed in contact with the peripheral surface of said first roller for removing foreign matter therefrom, a second rotatable roller having a peripheral surface normally spaced from said first roller surface, said first and second rollers being normally maintained non rotatably stationary and relatively spaced apart during nonoperation of said fixing apparatus, means for moving at least one of said rollers into peripheral surface pressure contact with the other of said rollers during operation of said fixing apparatus so that a toner image on a sheet passing between the two rollers is fixed to the sheet by the heated first roller, and means for causing rotation of said first and second rollers when said first and second rollers are relatively moved into peripheral surface pressure contact with each other, the improvement comprising:

means for initiating rotation of said first roller prior to said relative movement of the rollers into contact with each other so that said first roller is caused to rotate through at least one complete revolution prior to contact with said second roller whereby foreign matter is removed from the peripheral surface of said first roller by said cleaning blade prior to contact with the peripheral surface of said second roller.

4,367,691

APPARATUS FOR ADJUSTMENT OF THE COATING THICKNESS IN THE COATING OF TRAVELING WEBS

Erwin Bergs, Neuss, Fed. Rep. of Germany, assignor to Jagenberg Werke AG, Dusseldorf, Fed. Rep. of Germany

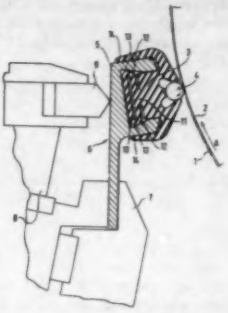
Filed Jun. 15, 1981, Ser. No. 274,324

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1980, 3022955

Int. Cl.³ B05C *11/02*

U.S. Cl. 118—119 **5 Claims**

1. In an apparatus for coating a traveling web and comprising coating means for the web, a doctor roll which bears on the coated side of the web, an elastomeric doctor-roll bed supporting the doctor roll and secured to the machine frame through a mount, the doctor roll bed including an inflatable tube constructed as a pressure chamber, and means for adjusting the location of the doctor roll and thus for adjusting the coating



thickness, the improvement wherein the pressure chamber is joined through a central fillet extending parallel to the doctor roll to that part of the doctor-roll bed which carries the doctor roll.

4,367,692

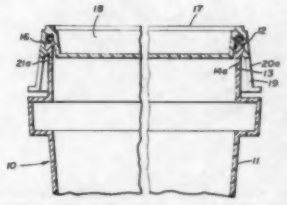
JOINT COMPOUND DISPENSER

Arthur A. Underwood, Libertyville, Ill., and Richard L. Radtke, Cincinnati, Ohio, assignors to United States Gypsum Company, Chicago, Ill.

Filed Oct. 29, 1980, Ser. No. 201,677

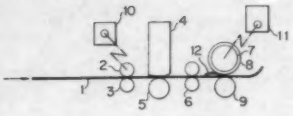
Int. Cl.³ B05C *3/12, 3/18*

U.S. Cl. 118—415 **4 Claims**



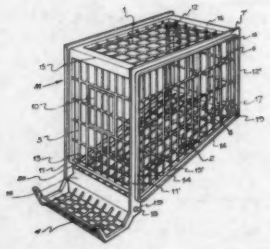
1. Apparatus for applying joint compound on wall board seam tape consisting essentially of a pail adapted to receive said joint compound and having a side wall whose upper edge includes a pair of opposed elongate notches, and a lid having a top wall and a skirt pendent therefrom along its perimeter and whose lower edge includes a pair of opposed elongate notches which are superimposable over said side wall notches to form a tape entrance slot and a tape exit slot, the lower horizontal margin of the side wall notches including one blunt-edged tab protruding on each side of centerline thereof and approaching the upper edge of the side wall, whereby the notches may be aligned to form slots and the container inverted to place the container in a dispensing mode such that a tape being drawn through the slots is contacted only by the tab portions of the side wall notches.

4,367,693
DEVELOPMENT APPARATUS
Masato Ogihara, and Masamitsu Tsubaki, both of Sagamihara, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Oct. 30, 1980, Ser. No. 202,162
Claims priority, application Japan, Nov. 20, 1979, 54/150466
Int. Cl.³ B05C *11/10*; G03G *15/09*
U.S. Cl. 118—674 7 Claims



1. A development apparatus comprising a sleeve for applying magnetic toner to a movable record medium, pulse motor means for stepwise transporting said record medium in accordance with pulses input thereto, a magnetic roller disposed within said sleeve, at least one of said sleeve and said magnetic roller being a rotatable member; drive means for rotating said rotatable member and speed variation means for changing the revolutions per unit time of said rotatable member in accordance with the number of said pulses per unit time input to said pulse motor means.

4,367,694
MODULAR ELEMENT TO BUILD GROUPS OF CAGES FOR EGG-LAYING FOWLS AND THE LIKE
Esteban Jose Goyheneix, Reconquista 661, 2°, Buenos Aires, Argentina (1003)
Filed Sep. 30, 1980, Ser. No. 192,258
Claims priority, application Argentina, Oct. 12, 1979, 278485
Int. Cl.³ A01K *31/06*
U.S. Cl. 119—17 9 Claims



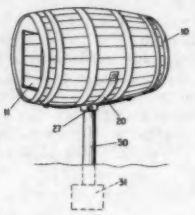
1. An apparatus for housing farm animals and the like, comprising:

(a) a modular cage which can be combined with similar cages to form aligned groups of cages, said cage comprising a unitary and essentially monolithic structure of substantially rigid plastic material, and including a cage floor, roof, back wall, front wall and a first side wall, the side of said cage opposed to said first side wall being open, said cage further comprising two peripheral borders, one around said first side wall and another around said opposed open side, said peripheral borders of adjacent cages comprise interfitting projecting and depessed areas respectively, that mate with each other to form a tight junction,

(b) means for supporting a plurality of said cages generally horizontally aligned in such a manner that the first side wall of a particular cage overlies the open side of an adjacently disposed cage, and

(c) means for retaining said aligned row of cages on said support means.

4,367,695
BARREL DOG HOUSE
Thomas N. Lance, 9410 Shaner, Rockford, Mich. 49341
Filed Jun. 25, 1981, Ser. No. 277,280
Int. Cl.³ A01K *1/00*
U.S. Cl. 119—19 2 Claims



1. An improved mounting means for mounting a barrel dog house of a generally cylindrical configuration on its cylindrical side comprising:

a mounting pole adapted to be mounted in the ground and extending above the ground such that when the dog house is mounted on the pole, the space under the dog house is available to the dog for movement and shade, thereby increasing the space available to the dog in a closely confined area;

a barrel mounting bracket adapted to be mounted on the top of the pole, the mounting bracket including:

an annular collar that fits over the top of the pole, the collar including a central plate mounted at the top thereof, with the plate having an opening means therein for attaching the mounting plate to

the cylindrical side of the barrel, the collar being of sufficient length to restrict the barrel from tipping when mounted on the pole;

four (4) mounting arms fastened to the outer periphery of the collar and extending outwardly at 90° intervals around the collar, two mounting arms being opposed side arms that are curved upwardly so as to conform to the cylindrical sides of the barrel, said side arms extending somewhat less than half way around the barrel in a plane perpendicular to the axis of the barrel so as to prevent the barrel from rolling off the mounting means in a sideways direction, the two remaining mounting arms extending longitudinally along the underside of the barrel to a point short of the ends of the barrel, all of the support arms including opening means in the outer ends thereof for attaching the support arms to the barrel;

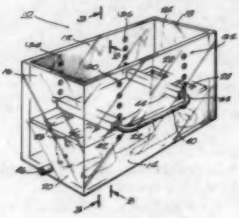
threaded fastener means that extend through the openings in the support arms and central plate for rigidly attaching the barrel mounting means to the barrel; and

pole fastening means for securely fastening the collar to the top of the pole after the barrel has been attached to the mounting bracket such that the barrel and attached mounting bracket cannot be lifted off the pole when the fastening means is secured.

4,367,696
CAT MANAGEMENT CHAMBER
Dennis R. Hamann, 5345 N. Lovers Lane Rd., Milwaukee, Wis. 53225
Filed Nov. 12, 1981, Ser. No. 320,275
Int. Cl.³ A01K *29/00*
U.S. Cl. 119—96 1 Claim

1. A restraining device for a cat to confine the cat during

administration of medication comprising wall means defining an enclosure having a bottom wall, end walls and spaced side walls, a partition movable within said walls in opposed relationship to said bottom wall and means for selectively adjustably positioning said partition relative to said bottom wall to provide an appropriate space there between to confine the cat located therein, said means comprising a U-shaped handle having a web portion and projecting parallel end portions interconnected by an intermediate portion, said end portions having a length greater than the distance between said side walls, each of said side walls having two spaced vertically aligned rows or apertures with the rows in each side wall



spaced at the same distance from the adjacent end walls and from each other and the height of corresponding apertures on each side wall being approximately the same and said partition having sleeve portions generally spanning the partition, said sleeve portions being spaced to receive the end portions of said handle so that said handle can be inserted through two horizontally aligned apertures in one side wall and be guided for movement into two horizontally aligned apertures in the opposite side wall by said sleeve portions so that any four of said apertures can be employed to support the partition at the selected height, with said handle web portion located laterally outwardly of a side wall for easy access.

4,367,697

MULTI-ZONE BOILER FOR FIRING WITH SOLID AND LIQUID FUEL

Karl Ackerman, Marktplatz, Massing, Rott, Fed. Rep. of Germany

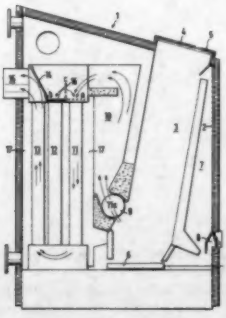
PCT No. PCT/DE80/00029, § 371 Date Nov. 5, 1980, § 102(e) Date Nov. 5, 1980, PCT Pub. No. WO80/01947, PCT Pub. Date Sep. 18, 1980

PCT Filed Mar. 13, 1980, Ser. No. 212,733

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1979, 2909720

Int. Cl.³ F22B *31/04*

U.S. Cl. 122—2 **9 Claims**



1. An alternative fuel furnace for alternately burning solid and liquid fuel with heat heat transfer efficiency, said furance comprising:

a furnace housing;

oil burning means in said housing;

solid fuel burning means in said housing;

a combustion chamber in said housing and communicating with both said oil and solid fuel burning means;

combustion gas discharge means in said housing for removing combustion gases from said housing, said combustion gas discharge means including a flue gas pipe;

a plurality of chimney gas flues in the form of flue gas duct units in said housing, each of said flue gas duct units having an upper end connected to said combustion chamber and a second end connected to said flue gas pipe for flowing gases in a single direction;

means at said upper end of said flue gas duct units for selectively bypassing said gas flow directly from said combustion chamber to said combustion gas discharge means;

means at said upper end of said flue gas duct units for selectively restricting the gas flow to selected ones of said flue gas duct units, said means for selectively restricting comprising at least one tiltable closure flap arranged at the upper end of the flue gas duct units, wherein each said closure flap is arranged between two flue gas duct units and is positionable for alternate full or partial closure of one of the other of the flue gas duct units, wherein in a central position of each said at least one closure flap all of said flue gas duct units are open so that the flue gases may flow therethrough; and

a control mechanism connected to said means for restricting, said control mechanism constructed to control said means for restricting depending upon the fuel being used and the temperature of the gases in said combustion gas discharge means,

whereby the selective positioning of said means for restricting can prevent residue of said solid fuel from reducing the heat transfer efficiency of selected ones of said flue gas duct units.

4,367,698

INTERNAL COMBUSTION ENGINE BASED ON REACTANT CONTACT IGNITION

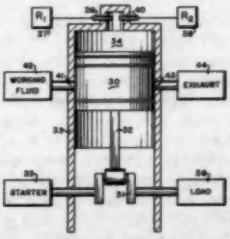
Stephen F. Skala, 3839 S. Wenonah Ave., Berwyn, Ill. 60402

Continuation-in-part of Ser. No. 301,285, Oct. 27, 1972, abandoned, and a continuation-in-part of Ser. No. 457,207, Apr. 2, 1974, Pat. No. 3,911,284, and a continuation-in-part of Ser. No. 464,454, Apr. 26, 1974, abandoned, and a continuation-in-part of Ser. No. 578,527, May 19, 1975, Pat. No. 4,020,798, and a continuation-in-part of Ser. No. 781,747, Mar. 28, 1977, abandoned, and a continuation of Ser. No. 950,845, Oct. 12, 1978, abandoned. This application Aug. 25, 1980, Ser. No. 181,080

The portion of the term of this patent subsequent to Oct. 7, 1992, has been disclaimed.

Int. Cl.³ F02B *75/12*

U.S. Cl. 123—1 A **12 Claims**



1. In an engine having an internal combustion chamber and

power generating displaceable engine means in said combustion chamber, the improvement comprising:

a source of reactants having negligible activation energy, joining said source of reactants to said internal combustion chamber,

means for introducing a working fluid into said internal combustion chamber whereby heat of an explosive reaction of said reactants directly operates said power generating displaceable engine means, and

a collector outside said internal combustion chamber to collect and store particulate by-products of combustion.

4,367,699

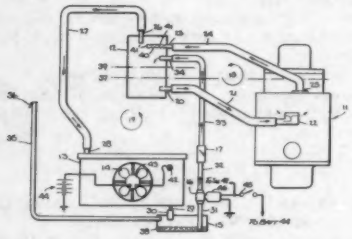
BOILING LIQUID ENGINE COOLING SYSTEM

John W. Evans, Sharon, Conn., assignor to EVC Associates Limited Partnership, Moorestown, N.J.

Continuation-in-part of Ser. No. 228,714, Jan. 27, 1981, abandoned, which is a continuation-in-part of Ser. No. 157,892, Jun. 9, 1980, abandoned. This application May 8, 1981, Ser. No. 261,695

Int. Cl.³ F01P *3/22*

U.S. Cl. 123—41.23 **39 Claims**



1. In a boiling liquid cooling system for an internal combustion engine including a coolant inlet and a coolant outlet, said cooling system including a separation tank coupled to said coolant inlet and coolant outlet for separating vaporized coolant from liquid coolant, condenser means coupled to said separation tank for condensing vaporized coolant flowing from said separation tank to said condenser means during operation of said engine, sump means coupled to said condenser means for receiving condensed coolant from said condenser means, said sump means being coupled to said separation tank for returning liquid coolant to said separation tank and to said engine, and vent means for venting non-condensible gases from said cooling system during operation of said engine, the improvement comprising said condenser means including means adapted to flow ambient air in heat exchange relation with said condenser means, and means, coupled to said air flow means and responsive to the presence of vaporized coolant at a selected location in said condenser means, for actuating said air flow means under high ambient air temperature engine operating conditions, whereby the rate of condensation of vaporized coolant in said condenser means is matched to the rate vaporized coolant is generated by said engine and flows to said condenser means and the flow of vaporized coolant from said condenser means into said sump means is prevented during operation of said engine, and a virtually constant predetermined pressure and predetermined temperature are maintained in said cooling system under all engine operating conditions.

4,367,700

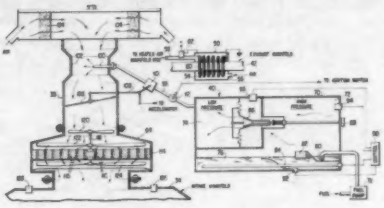
APPARATUS FOR INSURING THE COMPLETE BURNING OF FUEL IN A SIX CYCLE COMBUSTION ENGINE

James L. Pace, Calvert City, Ky., assignor to Hotspur International Corporation, Inc., Louisville, Ky.

Filed Jan. 19, 1981, Ser. No. 225,995

Int. Cl.³ F02B *75/02;* **F02M** *31/00*

U.S. Cl. 123—64 **10 Claims**



1. In an internal combustion engine operating on a six stroke cycle, the combination comprising:

(a) at least one cylinder having a cylinder wall and a cylinder head therefor, said cylinder head having a fuel and air mixture intake valve, a preheated air purge valve and an exhaust valve communicating with said cylinder, said intake valve, said purge valve and said exhaust valve each being connected to a common respective intake, purge and exhaust manifold,

(b) a piston operable in said cylinder,

(c) means connected to said intake manifold for supplying a mixture of fuel and ambient air to said cylinder via said intake valve during the first cycle of said piston, which is then compressed and expanded during the second and third cycles, respectively, of said piston, and

(d) means connected to said purge manifold for supplying air preheated to a temperature above that of ambient air to said cylinder for imparting heat to said wall of said cylinder to improve subsequent combustion of said mixture via said purge valve during the fifth cycle of said piston, said exhaust valve being opened during said fourth cycle of said piston for removing therefrom the products of combustion and opened during said sixth cycle of said piston for removing said preheated air.

4,367,701

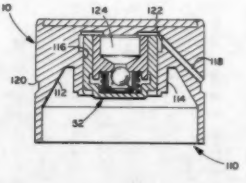
ACTING VALVE GEAR

Stephen M. Buente, Kalamazoo, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 5, 1979, Ser. No. 100,690

Int. Cl.³ F01L *1/14, 1/24*

U.S. Cl. 123—90.55 **8 Claims**



1. An hydraulic lash adjusting tappet for use in the valve gear of an internal combustion engine, said tappet comprising:

(a) body means, including structure defining,

(i) an outer annular wall having the outer periphery thereof forming a wear resistant surface;

(ii) an annular hub disposed within said annular wall and

spaced therefrom, said hub having one end thereof closed and the annular inner periphery thereof disposed in generally parallel relationship to said wear surface;

(iii) a plurality of webs disposed in circumferentially spaced arrangement about said annular wall and with each web extending inwardly therefrom to said hub and joined thereto for supporting same, wherein said body means structure is formed of material having a coefficient of thermal expansion not less than 22×10^{-6} per unit length per degree centigrade as measured in the range 20–100 degrees C.;

(b) a face member having a cam face formed thereon, said member being disposed over said hub end and extending outwardly to said annular wall and being joined thereto, said face member being formed of material having surface hardness value of at least 89 as measured on the Rockwell 15 N scale for the cam face;

(c) hydraulic lash adjusting means movably received in the open end of said hub, said lash adjusting means including structure defining a reaction surface adapted for contacting associated components of the engine valve gear, said reaction surface extending generally parallel to said cam face and being movable with respect thereto, said lash adjusting means including means defining a fluid pressure chamber and one-way valve means operable to admit fluid to said chamber for altering the position of said reaction surface with respect to said cam face for lash adjustment in said valve gear, said lash adjusting means further including means biasing said reaction surface away from said cam face;

(d) said body means including structure defining a fluid passage from said wear resistant surface to said one-way valve means for communicating fluid thereto upon installation of said tappet in an engine and supplying pressurized fluid to said passage; and,

(e) means retaining said lash adjusting means in said hub.

4,367,702

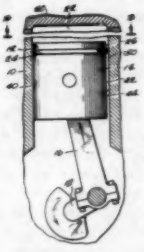
INTERNAL COMBUSTION ENGINE WITH AUTOMATIC COMPRESSION RELEASE

George G. Lassanske, Oconomowoc, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jan. 30, 1981, Ser. No. 230,126

Int. Cl.³ F02F 5/00

U.S. Cl. 123—182 **3 Claims**



1. An internal combustion engine including an engine block, a cylinder located in said engine block, a cylinder head defining an end wall of said cylinder, a piston housed in said cylinder and defining with said cylinder and said cylinder head a combustion space adapted to receive therein a mixture of fuel and air, and said piston being reciprocably movable toward said cylinder head to compress a fuel mixture in said cylinder and away from said cylinder head, said piston engaging one side of said cylinder as said piston moves toward said cylinder head and engaging an opposite side of said cylinder as said piston moves away from said cylinder head, an annular groove in the periphery of said piston, and a piston ring housed in said annular groove, said piston ring including opposite ends being spaced apart and forming a gap, said piston ring being positioned with said gap adjacent said opposite side of said cylinder so that said gap is closed during piston movement from said head and so that said gap provides compression relief during piston movement toward said head.

4,367,703

APPARATUS FOR ENGAGING AND DISENGAGING DISCRETE CRANKSHAFTS IN INTERNAL COMBUSTION ENGINES

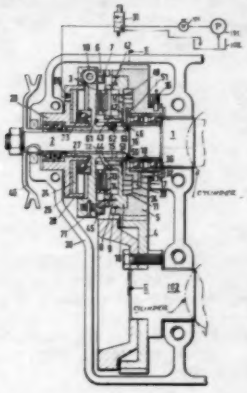
Paul Maucher, Sasbach, and Oswald Friedmann, Lichtenau, both of Fed. Rep. of Germany, assignors to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

Filed Feb. 12, 1981, Ser. No. 233,959

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1980, 3005345

Int. Cl.³ F02B 75/18

U.S. Cl. 123—198 F **26 Claims**



1. In an internal combustion engine, the combination of a first engine section having a normally rotating first crankshaft; a second engine section having a second crankshaft parallel to said first crankshaft; means for accelerating said second crankshaft to the speed of said first crankshaft; and clutch means operable to separably couple said crankshafts upon completed acceleration of said second crankshaft.

4,367,704

INTERNAL COMBUSTION ENGINE WITH SEPARABLE CRANKSHAFTS

Paul Maucher, Sasbach, and Oswald Friedmann, Lichtenau, both of Fed. Rep. of Germany, assignors to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

Filed Feb. 12, 1981, Ser. No. 233,960

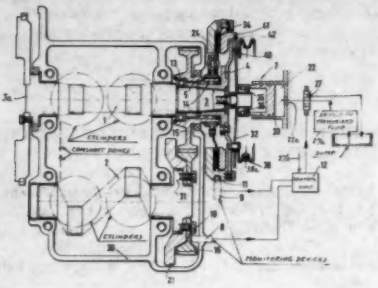
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1980, 3005368

Int. Cl.³ F02B 75/18

U.S. Cl. 123—198 F **30 Claims**

1. In an internal combustion engine, the combination of a first engine section having a first crankshaft; a second engine section having a second crankshaft parallel with said first crankshaft; an accelerating clutch actuatable to transmit torque from one of said crankshafts to the other of said crankshafts, said clutch including a first clutch member receiving torque from said one crankshaft, a second clutch member arranged to transmit torque to said other crankshaft and to receive torque from said first clutch member, and actuating means having

means for gradually increasing the rate of torque transmission from said first to said second clutch member until the rotational speed of said second clutch member at least approximates the rotational speed of said first clutch member.

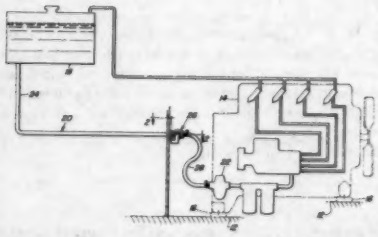


4,367,705

HEAT ACTIVATED FUEL SHUT-OFF VALVE ACTUATOR

James F. Oeth, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Apr. 30, 1981, Ser. No. 259,138
Int. Cl.³ F02B *37/00*
U.S. Cl. 123—198 DB **2 Claims**



1. In a vehicle including an engine, a fuel pump carried by the engine, a fuel tank, and a fuel line connected between the tank and the pump and including at least one section of flexible hose having an end connected to the fuel pump, the improvement of an automatic fuel shut-off device comprising: a valve housing defining a valve bore and inlet and outlet ports leading to spaced locations of the bore, a valve element reciprocably mounted in the bore between the inlet and outlet ports for movement between first and second positions for respectively establishing and preventing fluid communication between the ports, and a heat sensitive actuator connected to the valve element for moving the latter from its first to its second position in response to receiving heat at a temperature indicative of a fire in the vicinity of the controller, and said outlet port being connected to the flexible hose, and metal conduit means connecting the inlet port to the fuel tank.

4,367,706

FUEL INJECTION PUMP FOR AIR-COMPRESSING FUEL INJECTED INTERNAL COMBUSTION ENGINES

Heinz Scheying, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz A.G., Stuttgart, Fed. Rep. of Germany

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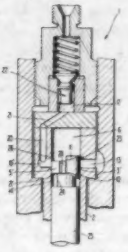
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1978, 2836961
Int. Cl.³ F02M *45/06*
U.S. Cl. 123—300 **9 Claims**



1. A fuel injection pump for an air-compressing fuel injected internal combustion engine, the fuel injection pump including a pump piston means arranged in a pump cylinder means for controlling a fuel control bore communicating with a pump working chamber means, a fuel control element in constant connection with the pump piston means, means provided in said control element for constantly communicating the pump working chamber means with an intermediate chamber means disposed above the control element and for communicating the pump working chamber means with a pump pressure chamber means during a stroke of the piston means, characterized in that means are provided for temporarily interrupting the communication between the pump working chamber means and the pump pressure chamber means for a predetermined period of time during a stroke of the pump piston means such that, prior to the interruption, a variable preliminary injection quantity of fuel is conveyed and subsequent to the interruption, a principal injection quantity of fuel is conveyed by the fuel injection pump,

the control element is integrated into the pump piston,

the pump piston means includes a top control edge means and a bottom control edge means for controlling the flow of fuel to be injected, the top control edge means and bottom control edge means being arranged on a first half of the pump piston means, the means for constantly communicating the pump working chamber means with the intermediate chamber means and for communicating the pump working chamber means with the pump pressure chamber means includes a bore arrangement leading to the pump pressure chamber means, the control element includes a top and bottom control edge means arranged in a half of the pump piston means disposed oppositely the half of the pump piston means provided with the top and bottom control edge means, the pump piston means includes a neck portion disposed beneath the control element, the neck portion and a portion of the pump cylinder means form an annular chamber means defining the pump working chamber means, and in that a passage means is provided in the control element for placing the annular chamber means in constant communication with the intermediate chamber means, and

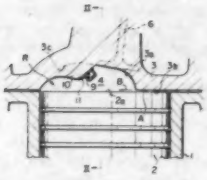
the top control edge means of the control element serves to interrupt a feed of fuel so as to define an end of the preliminary injection and the bottom control edge means of the control element serves to reinstate the feed of the fuel so as to define a beginning of the principal injection.

4,367,707

COMBUSTION CHAMBER OF AN INTERNAL COMBUSTION ENGINE

Makoto Suzuki, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 184,488, Sep. 5, 1980, abandoned, which is a continuation of Ser. No. 972,290, Dec. 22, 1978, abandoned. This application Jan. 25, 1982, Ser. No. 342,319
Claims priority, application Japan, Oct. 31, 1978, 53-133142
Int. Cl.³ F02B 23/00
U.S. Cl. 123—306 4 Claims



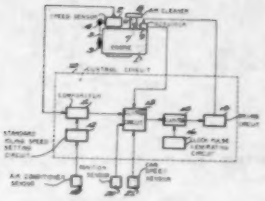
1. An internal combustion engine comprising
a cylinder block having a cylinder bore therein;
a piston having a flat top face and being reciprocally movable in said cylinder bore;
a cylinder head fixed onto said cylinder block and having an inner wall overlying the adjacent end of the cylinder bore, said inner wall having a flat wall portion and a concave wall portion, said flat wall portion circumferentially extending along a part of the periphery of said inner wall and defining a flat squish area on one side of the axis of said cylinder bore between said flat wall portion and said flat top face of said piston, said concave wall portion and said flat top face of the piston defining a combustion chamber when said piston is at its top dead center position, which combustion chamber has a central axis parallel to and offset on an opposite side of the axis of said cylinder bore;
an intake valve arranged on said concave wall portion;
an exhaust valve arranged on said concave wall portion; and
a spark plug having a spark gap arranged in said combustion chamber, wherein the improvement comprises:
a projection having a concave bottom wall and a flat side wall extending from a region of the surface of the concave wall portion of said inner wall of the cylinder head located between the axis of the cylinder bore and said central axis of the combustion chamber, the flat side wall being inclined at an acute angle with respect to said central axis of the combustion chamber and facing the squish area, and a threaded bore extending through said projection perpendicular to said flat side wall, the spark plug being mounted in said threaded bore with its spark gap located close to the plane of said flat side wall approximately at a point on said central axis of the combustion chamber which is midway between the intersections of said central axis with the concave wall portion of the inner wall of the cylinder head and the flat top face of the piston when the piston is at its top dead center position, wherein the cross-sectional area of the projection progressively decreases with distance from said inclined flat side wall on the opposite side of the combustion chamber from the squish area, such that the concave bottom wall of the projection becomes flush with the concave wall portion of said cylinder head surrounding the projection prior to reaching the plane of said flat wall portion of said cylinder head, wherein the volume of the combustion chamber on said opposite side of the inclined side wall is approximately the same as the volume on the side facing the squish area.

4,367,708

SYSTEM FOR REGULATING THE ENGINE SPEED

Hiroyuki Nakamura, Higashiyamato; Makoto Shikata, Musashimurayama, and Masaaki Ohgami, Musashino, all of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo and Nissan Motor Co., Ltd., Yokohama, both of, Japan

Filed Mar. 5, 1981, Ser. No. 240,689
Claims priority, application Japan, Mar. 7, 1980, 55-29334
Int. Cl.³ F02D 9/02
U.S. Cl. 123—339 8 Claims



1. A system for regulating the engine speed of an internal combustion engine having a carburetor and a throttle valve in said carburetor, comprising:
an electro-mechanical actuator for maintaining said throttle valve to an open state,
a speed sensor for detecting the speed of said engine,
comparing circuit means connected to said speed sensor,
setting circuit means for applying a standard level to said comparing circuit means for comparing the output of said speed sensor with the standard level,
control circuit means for producing a pair of output signals for a time period in dependency on the output of said comparing circuit means,
driving circuit means for driving said electro-mechanical actuator for increasing and decreasing said open state of said throttle valve in dependency on said output of said control circuit means,
said control circuit means comprises a clock pulse generating circuit, a counter for counting the clock pulses, a logic circuit connected to said comparing circuit means and to said counter, and gate means, which are so arranged that said gate means are opened for a time period in dependency on the output of said comparing circuit means.

4,367,709

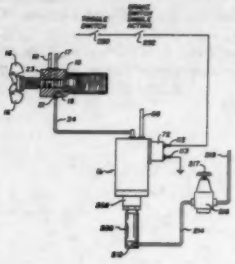
DIESEL ENGINE SPEED GOVERNOR

Ernest R. Codrington, 1580 Cornell Ave., Coquitlam, B.C., Canada (V3J 3A1)

Continuation-in-part of Ser. No. 961,523, Nov. 17, 1978, Pat. No. 4,291,657. This application Jun. 29, 1981, Ser. No. 278,047
Int. Cl.³ F02D 1/04; F02M 69/00; F02D 11/10; F02B 77/00
U.S. Cl. 123—339 14 Claims

1. A fuel system for a diesel engine having a common rail fuel injection system, the system comprising a fuel pump mechanically driven by the diesel engine;
a centrifugal governor to govern maximum engine speed;
means defining a first fuel pathway to the centrifugal governor from the fuel pump;
means defining a second fuel pathway from the centrifugal governor to the fuel pump;
means defining a third fuel pathway from the centrifugal governor from a position in the centrifugal governor between the first and second passageways;
a high idle speed governor comprising a hydraulically activated valve means with a body;
a fuel inlet for connecting the valve means to the third passageway;
a fuel outlet for connecting the valve means to the fuel injectors of the engine, the valve means being activated by

increasing fuel pressure to decrease the flow of fuel from the inlet to the outlet and being activated by decreasing



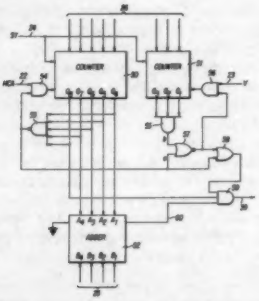
fuel pressure to increase the flow of fuel from the inlet to the outlet.

4,367,710

SPARK COIL CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINE EQUIPPED WITH ELECTRONIC IGNITION ADVANCE

Robert Deleris, Bailly, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Dec. 10, 1980, Ser. No. 214,973
Claims priority, application France, Jan. 29, 1980, 80 01834
Int. Cl.³ F02P 5/08
U.S. Cl. 123—416 **5 Claims**



1. A spark coil control device for an internal combustion engine having a crankshaft and plural cylinders, of the type provided with a target having associated therewith a number of protrusions distributed around its periphery which is rotating with the crankshaft, and at least one fixed position primary element associated with said target for generating a data signal, an ignition coil, and a spark distributor intended to induce explosions within the various cylinders of the engine in succession by the intermediary of respective sparkplugs, comprising:

a stage for treatment of the data signal generated by the position primary element, which provides a synchronization signal, a speed of rotation signal, and a third (HCA) signal having a frequency which is the product of the speed or rotation of the engine by the associated number of protrusions on the periphery of the target;

an electronic ignition advance calculator having a first output which provides a gross numerical value for ignition advance angle and a second output which provides a gross numerical value for the angle of conduction of the coil;

a power stage for commanding said ignition coil;

a command signal generator stage connected to the two outputs of the electronic advance calculator and the power stage commanding the ignition coil, said command signal generator stage comprising,

a first counter, a second counter, and means for treating the initial conduction angle of the coil and the ignition advance angle based on the three signals provided by said stage for treatment of the primary element data signal,

said first counter and said second counter having respective inputs connected to the output of the ignition advance calculator providing the gross numerical value for the ignition advance angle,

said first counter having a clock input connected to the stage for treatment of the data signal generated by the position primary element thereby to receive therefrom the third (HCA) signal and output bits ranging from a most significant output bit to a least significant output bit,

said second counter having a clock input connected to the stage for treatment of the signal retrieved by the position primary element so as to receive therefrom the speed of rotation signal, and

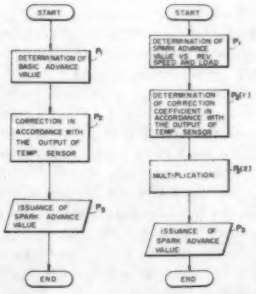
an adding stage connected by a first series of inputs to selected of the output bits of said first counter and by a second series of inputs to the output of said ignition advance calculator for providing a gross numerical value for the conduction angle.

4,367,711

METHOD AND APPARATUS FOR IGNITION SYSTEM SPARK TIMING CONTROL WITHIN WARM-UP PERIOD OF THE ENGINE

Kenji Ikeura, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 3, 1980, Ser. No. 136,959
Claims priority, application Japan, Apr. 16, 1979, 54-45327
Int. Cl.³ F02P 5/04
U.S. Cl. 123—417 **4 Claims**



1. A method for the control of an ignition system spark timing for a spark ignition internal combustion engine, said method comprising the steps of:

sensing engine temperature of the engine; and

correcting a value of spark advance that is determined by calculation based upon engine operating parameters excluding the sensed engine temperature in accordance with the sensed engine temperature,

said correcting step including the steps of:

finding by table look-up in a read only memory a correction coefficient for the sensed engine temperature, said read only memory having a plurality of correction coefficient values and a plurality of corresponding engine temperature values stored therein which values define a two dimensional table having a first zone wherein the value of the correction coefficient remains constant with increase of temperature, a second and subsequent zone in which the value of the correction coefficient decreases proportionally with respect to increase in temperature, a third

and subsequent zone in which the value of the correction coefficient remains constant with increase in temperature, a fourth and subsequent zone in which the value of the correction coefficient increases to a level equal to the level at which the correction values remain constant in said first zone and a fifth and subsequent zone in which the values of said correction coefficient remain constant with increase of temperature;

multiplying the value of spark advance that is determined by calculation based upon engine operating parameters excluding the sensed engine temperature with said coefficient to provide a result; and

providing said result as an output value of spark advance.

4,367,712

IGNITION TIMING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

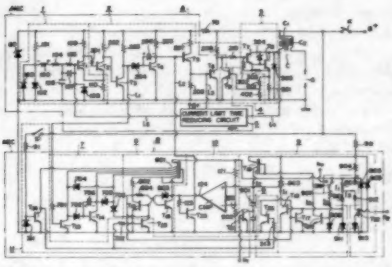
Noboru Sugiura, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 1, 1979, Ser. No. 80,202

Claims priority, application Japan, Sep. 29, 1978, 53-119350; Mar. 7, 1979, 54-25591; Mar. 7, 1979, 54-27160

Int. Cl.³ F02P 5/04

U.S. Cl. 123—427 **19 Claims**



1. The ignition timing control system for an internal combustion engine comprising a circuit for generating a reference ignition signal in synchronism with the rotation of the engine, a circuit for generating a retard ignition signal at a point shifted by a selected shaft angle of the engine from the reference ignition signal, and an ignition circuit for controlling the ignition timing of the engine according to the retard ignition signal, wherein said retard ignition signal generator includes a capacitor circuit for charging and discharging, a first current circuit for always supplying a first current to the capacitor circuit, said first current circuit forming a first current mirror circuit including a first transistor coupled to said capacitor circuit, a second current circuit for supplying said capacitor circuit with a second current which has reverse polarity to the first current and which is equal to the sum of the first current and a discharge current from the capacitor circuit, said second current circuit forming a second current mirror circuit including a second transistor coupled to said capacitor circuit, a switching circuit which starts the flow of the second current in synchronism with the reference ignition signal and cuts off the second current when the terminal voltage across said capacitor circuit reaches a reference level, and an output circuit for generating the retard ignition signal when the terminal voltage across said capacitor circuit reaches the reference level, wherein each of said first and second current circuits comprises a series circuit of a resistor and a diode which is connected with an emitter-base path of each of said first and second transistors in parallel, so that the collector currents of said first and second transistors are equal to the first and second currents respectively.

4,367,713

AIR/FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES, HAVING AIR/FUEL CONTROL FUNCTION AT ENGINE DECELERATION

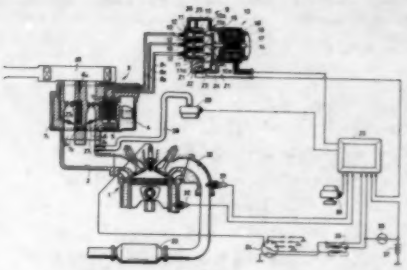
Kazuo Otsuka, Higashikurume; Shin Narasaka, Yono, and Shumpei Hasegawa, Niiza, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 13, 1981, Ser. No. 282,416

Claims priority, application Japan, Jul. 21, 1980, 55-99481

Int. Cl.³ F02M 7/00; F02G 3/00; F02B 33/00; F02M 11/00

U.S. Cl. 123—440 **2 Claims**



1. In an air/fuel ratio control system for performing feedback control of the air/fuel ratio of an air/fuel mixture being supplied to an internal combustion engine, including an O_2 sensor for detecting the concentration of oxygen present in exhaust gas emitted from said engine, fuel quantity adjusting means for producing said air/fuel mixture being supplied to said engine, and means operatively connecting said O_2 sensor with said fuel quantity adjusting means in a manner effecting feedback control operation in response to an output signal produced by said O_2 sensor to control the air/fuel ratio of said air/fuel mixture to a preset value, the combination comprising: an absolute pressure sensor for detecting absolute pressure in an intake pipe provided in said engine, first means connected to said absolute pressure sensor for producing a signal for interrupting said feedback control operation when the absolute pressure in said intake pipe, detected by said absolute pressure sensor is lower than a predetermined value, second means responsive to said feedback control interrupting signal to interrupt said feedback control operation, and third means responsive to said feedback control interrupting signal to operate to cause said fuel quantity adjusting means to supply an air/fuel mixture having a predetermined air/fuel ratio to said engine, said first, second and third means forming said connecting means.

4,367,714

FUEL INJECTION PUMP

Robert A. DiDomenico, Ludlow; John B. Cavanaugh, West Springfield, both of Mass., and John A. Kimberley, East Granby, Conn., assignors to Ambac Industries Incorporated, Springfield, Mass.

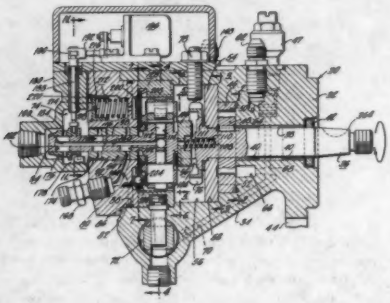
Filed Jan. 19, 1981, Ser. No. 226,441

Int. Cl.³ F02D 1/02; F02M 45/00

U.S. Cl. 123—449 **15 Claims**

1. A fuel injection pump for a diesel engine comprising a housing assembly, a rotor disposed within said housing assembly, means for driving said rotor in rotation at a speed corresponding to engine speed, said rotor comprising a pump body and a distributor shaft, a hydraulic head in said housing assembly, a bore in said hydraulic head for rotatably supporting said rotor distributor shaft, opposed pistons disposed within radial bores of said pump body, said pump body radial bores intersecting to form a pumping chamber, tappet assemblies associated with each said piston, an internal ring cam disposed in said housing concentrically with said rotor for cooperation with said tappet assemblies to provide a pumping movement of said

pistons upon rotation of said rotor, means for varying the rotational position of said cam in response to changes in engine operating conditions, an axial bore within said distributor shaft communicating with said pumping chamber, a distributor slot in said distributor shaft, a plurality of spaced distributor ports in said hydraulic head, said distributor slot aligning sequentially with said distributor ports upon rotation of said rotor, passage means in said hydraulic head communicating with said distributor ports for connecting said ports with the engine fuel injection nozzles, a fuel gallery adjacent one end of said hydraulic head, means for supplying fuel under pressure to said fuel gallery, said pump body being disposed adjacent the other end of said hydraulic head at one end of said distributor shaft, the opposite end of said distributor shaft extending beyond said



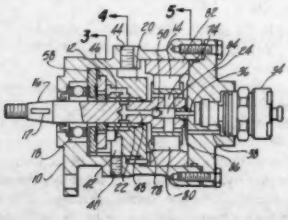
hydraulic head into said fuel gallery, a spill sleeve on said extending end of said distributor shaft, slot and port means on said distributor shaft and spill sleeve for providing a communication of said distributor shaft bore and said gallery to effect termination of injection, fuel metering control means for varying the position of said spill sleeve with respect to said distributor shaft in accordance with the operating conditions and the fuel demands of the engine, port closing means for providing fluid communication between said distributor shaft bore and said fuel gallery during an initial portion of the pumping stroke of said pistons and for cutting off said communication to initiate fuel injection, and timing control means for simultaneously changing the timing of the closing of said port closing means and the opening of said spill sleeve and distributor shaft slot and port means.

4,367,715

DISTRIBUTION INJECTION PUMP FOR DIESEL ENGINES

Edwin B. Watson, Farmington Hills, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Dec. 17, 1980, Ser. No. 217,298
Int. Cl.³ F02M *37/04*
U.S. Cl. 123—458 **11 Claims**



1. A distributor fluid injection pump controlled by electrical signals comprising:

a generally cylindrical housing having an enclosed end and an open end, a shaft aperture passing concentrically through said enclosed end, and an inlet port disposed intermediate said enclosed end and said open end;

a shaft passing through said shaft aperture having a driven end adapted to be rotatably driven external to said housing and an internal portion supported for rotation within said housing, said shaft having a concentric axial bore in said internal portion receiving fluid from said inlet port at one end and forming an axial spill port exiting at the end of the internal portion of said shaft;

injection pump means attached to said shaft intermediate said one end of said axial bore and said spill port for pumping the fluid received at said one end of the axial bore in response to the rotation of said shaft to generate a fluid flow in said internal bore towards the spill port;

a distributor block enclosing the open end of said housing and interfacing the end of the internal portion of said shaft, said distributor block having a return passageway, a spill passageway disposed concentric with said shaft and interconnecting said spill port with said return passageway, and a plurality of injection ports disposed symmetrically around said spill passageway;

distributor means having an outlet port connected to said axial bore for interconnecting said outlet port to said injection ports, one at a time in a repetitive sequence in response to the rotation of said shaft; and

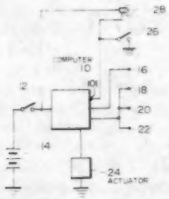
a single solenoid valve connected to said distributor block between said spill and return passageways for controlling the fluid flow through said spill passageway in response to electrical signals; said solenoid valve having a first state enabling said fluid flow through said spill passageway to said return passageway and a second state blocking a fluid flow through said spill passageway.

4,367,716

FUEL INJECTION TIMING CONTROL SYSTEM

Seishi Yasuhara, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 30, 1980, Ser. No. 192,368
Claims priority, application Japan, Oct. 4, 1979, 54-128159
Int. Cl.³ F02M *51/00*
U.S. Cl. 123—478 **8 Claims**



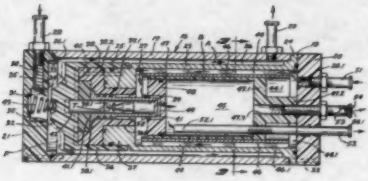
1. A fuel injection timing control system for use in an internal combustion engine having an accelerator pedal, said system including a computer responsive to various conditions of said engine for determining an optimum value of fuel-injection timing, manually operable control means for providing a control signal, and first switch means for disconnecting said control signal if said accelerator pedal is depressed more than a predetermined amount, and said computer being responsive to the control signal from said control means for retarding the fuel-injection timing a predetermined value with respect to said optimum value of fuel injection timing.

4,367,717

FUEL TREATING APPARATUS FOR ENGINES

Dennis A. Ray, Crookston, Minn., assignor to Northwest Investments, Crookston, Minn.

Filed Apr. 7, 1980, Ser. No. 138,218
Int. Cl.³ F02M 31/00
U.S. Cl. 123—557 11 Claims



1. An engine attachment for heating liquid fuel with heat from the hot engine coolant comprising

an elongate container having an elongate annular side wall with ends upon which transverse first and second end walls are affixed,

an elongate annular heat transfer wall affixed within the container and extending from said first transverse end wall and along and in spaced relation to the annular side wall to define a hot engine coolant flow passage therebetween and entirely surrounding the heat transfer wall,

fuel flow guide means within the heat transfer wall and around the entire inner periphery thereof for defining restricted passage means extending from one end of the heat transfer wall to the other end thereof and causing the fuel to scrub against the heat transfer wall as the fuel progresses through the container,

a variable flow valve in flow communication with the hot engine coolant flow passage to regulate and vary the flow of the hot engine coolant through said passage and along the heat transfer wall, the flow valve having a temperature sensitive control varying the flow opening of the valve and a temperature sensing element for the control and in flow communication with the fuel inwardly of the heat transfer wall,

a fuel inlet fitting on the container adjacent the first end wall and directing the fuel into said passage means,

a hot engine coolant inlet fitting adjacent the end of the elongate container opposite said first end wall for supplying the hot engine coolant into the hot engine coolant flow passage,

said temperature sensing element of the temperature sensitive control being located in said passage means adjacent an end of the heat transfer wall remote from said first transverse end wall to sense fuel temperature after heating of the fuel is complete,

and the container also having outlet means for discharging hot engine coolant from the flow passage adjacent said first end wall, and

fuel outlet means adjacent the temperature sensing element to discharge the fuel after the temperature has been sensed.

4,367,718

FUEL PREHEATING DEVICE

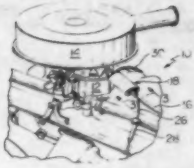
Jacob Heine, 3349 Wunder Ave., Cincinnati, Ohio 45211

Filed Oct. 20, 1980, Ser. No. 198,535
Int. Cl.³ F02M 31/00
U.S. Cl. 123—557 4 Claims

1. In combination with an internal combustion engine having a fuel conduit for supplying fuel to the engine, a fuel preheating device, comprising:

(a) a pair of elongated electrical resistance heating elements;

(b) a retaining clip which securely holds said pair of electrical heating elements in spaced parallel relationship to each other, said retaining clip resiliently biasing each one of said pair of elongated heating elements in juxtapositional contacting heat transfer relationship with the fuel conduit on opposite sides of the fuel conduit so as to compressingly engage the fuel conduit between the heating elements, said retaining clip spanning the fuel conduit between the heating elements along substantially the entire length of the heating elements to inhibit heat transfer between the heating elements and the atmosphere; and



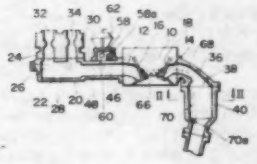
(c) means for connecting said heating elements to an electrical power source.

4,367,719

CROSS-FLOW TYPE INTERNAL COMBUSTION ENGINE HAVING AN EXHAUST GAS RECIRCULATION SYSTEM

Susumu Kimura, Tokyo; Hiroyosi Ario, and Minoru Midorikawa, both of Koganei, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 2, 1981, Ser. No. 239,658
Claims priority, application Japan, Mar. 3, 1980, 55-26154[U]
Int. Cl.³ F02M 25/06
U.S. Cl. 123—568 12 Claims



1. An internal combustion engine having a cross-flow type cylinder head, an intake manifold mounted to one side of said cylinder head, a carburetor arranged upstream of said intake manifold, an exhaust manifold mounted to the other side of said cylinder head, and an exhaust gas recirculation system which feeds a part of the exhaust gas of said engine into said intake manifold, said exhaust gas recirculating system comprising:

a first block integrally mounted on said intake manifold, said first block including therein a first through passage having one end open to a distribution chamber of the intake manifold from which chamber branch tubes of the intake manifold extend toward said cylinder head and an opposite end connected to a second through passage formed in a portion of said cylinder head;

a second block integrally formed with said exhaust manifold, said second block including therein a third through passage having one end connected to the other end of said second through passage and an opposite end of third through passage being open to a portion downstream of branch tubes of the exhaust manifold; and

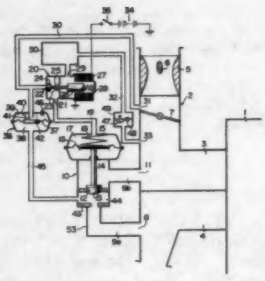
gas flow rate control means for controlling the exhaust gas flowing in the connected first, second and third through passages in accordance with operation modes of said engines.

4,367,720

RUN ON PREVENTION SYSTEM SUPPLYING MAXIMUM EXHAUST GAS RECIRCULATION

Takeo Miyoshi; Takanori Nagai, and Akira Ii, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 12, 1980, Ser. No. 215,701
Claims priority, application Japan, Jul. 29, 1980, 55-104004
Int. Cl.³ F02M 25/06; F02D 7/00
U.S. Cl. 123—571 1 Claim



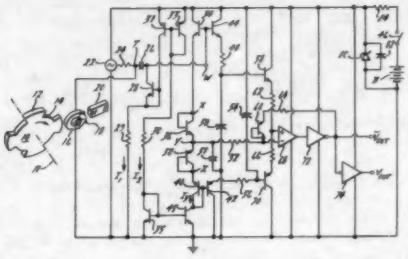
1. For an internal combustion engine comprising:
an ignition system;
an exhaust system;
an intake system including an intake passage with a throttle valve mounted therein;
pipe means connecting said exhaust system with said intake system;
a vacuum operated flow control valve arranged on said pipe means and having a vacuum operating chamber which is normally connected to a first vacuum port formed in said intake passage at a position located slightly upstream of said throttle valve when closed in its idle position, said vacuum operated valve being opened by a vacuum signal transmitted to said chamber from said first vacuum port when the throttle valve is, during the operation of the engine, opened from said idle position so that the port is located downstream of said throttle valve, thereby causing a part of the gas from the exhaust system to be recirculated to the intake system via said pipe means;
a run on prevention system comprising:
a vacuum tank and a parallel connection of a one way valve and a throttling element, said vacuum tank receiving vacuum from said intake system through a second vacuum port formed in said intake passage at a position downstream of said throttle valve in its idle position, said vacuum tank receiving vacuum through both said one way valve and said throttling element while said internal combustion engine is running; and
switching valve means which connect said vacuum operating chamber with said first port when said ignition system is supplied with actuating electrical power and which disconnects the connection of said vacuum operating chamber with said first port and connects said vacuum operating chamber with said vacuum tank when said ignition system is not supplied with actuating electrical power.

4,367,721

SIGNAL DETECTION CIRCUIT WITH SELF-ADJUSTING THRESHOLD HAVING MODULATED CARRIER INPUT

Wesley D. Boyer, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 64,699, Aug. 8, 1979, Pat. No. 4,293,814. This application Oct. 20, 1980, Ser. No. 198,890
Int. Cl.³ F02P 1/00
U.S. Cl. 123—617 6 Claims



1. A signal condition detection circuit with self-adjusting threshold, said circuit comprising:
an oscillator for producing a first AC signal at a first frequency;
means for amplitude modulating said first AC signal;
means for demodulating said first amplitude modulated AC signal to produce a second cyclically varying signal corresponding to the peak to peak value of said amplitude modulation;
means for sensing the maximum peak value of said second cyclically varying signal;
means for sensing the minimum peak value of said second cyclically varying signal;
means for generating a DC threshold signal having a voltage level bearing a predetermined relationship to both said sensed minimum and maximum peak values of said second cyclically varying signal; and
means for generating an electrical output signal having a voltage level characteristic that changes from a first to a second predetermined voltage level whenever said second cyclically varying signal crosses said DC threshold level;
whereby said DC threshold signal characteristic varies as a function of said sensed minimum and maximum values of said second cyclically varying signal.

4,367,722

CONTACTLESS IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINE

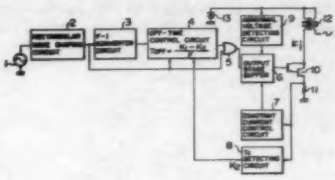
Tiaki Mizuno, Toyota, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 24, 1980, Ser. No. 190,255
Claims priority, application Japan, Sep. 27, 1979, 54-125119
Int. Cl.³ F02P 1/00
U.S. Cl. 123—644 4 Claims

1. A contactless ignition system for an internal combustion engine comprising:
an ignition coil including a primary winding and a secondary winding;
switching means connected to the primary winding of said ignition coil for controlling the starting time and interruption time of primary current supplied to said primary winding;
current detecting means connected to the primary winding of said ignition coil for detecting the level of primary current supplied to said primary winding;
a rising time detecting circuit connected to said current detecting means for detecting the rising period of time for

the level of the primary current to attain a predetermined setting;

rotational speed detecting means for detecting the rotational speed of the engine; and



a dwell angle control circuit connected to said switching means, said rising time detecting circuit and said rotational speed detecting means for controlling the starting time of primary current supplied to said primary winding by said switching means in response to the rising period of time detected by said rising time detecting circuit.

4,367,723

AIR GUN WITH PISTON FULLY COCKED IN PLURALITY OF STAGES

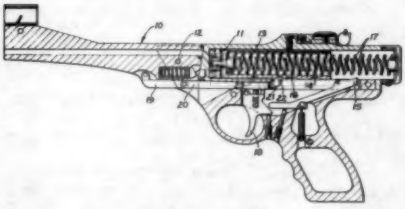
Harold F. Resuggan, Birmingham, England, assignor to Webley and Scott Limited, Birmingham, England

Filed Jan. 5, 1981, Ser. No. 222,676

Claims priority, application United Kingdom, Jan. 9, 1980, 8000682

Int. Cl.³ F41B *11/00*

U.S. Cl. 124—67 **6 Claims**



1. A high performance air gun including an air-compressing power piston mounted in a cylinder, spring means operable to apply a substantial driving force to the piston, a barrel of substantial length pivoted for breaking movement between a loading position at which a projectile is loaded into a breech end of the barrel and an operating position at which the breech is closed for the projectile to be driven along the barrel by air pressure under the action of said piston; trigger releasable retaining means for co-acting automatically with the piston at the fully cocked position and at at least one intermediate position between the fully cocked position and its fully released location to retain the piston at either of said positions; trigger means selectively operable for disengaging the retaining means from the piston when the latter is at either said position so enabling the gun to be used selectively at less than full power, and cocking means driven by lever action of the barrel during said breaking movement and engageable with the piston at the fully released location in an outward lever movement for driving the piston to said intermediate position and re-engageable with the piston following inward lever movement in a repeat outward lever movement for driving the piston from said intermediate position to the fully cocked position, said cocking means including a member longitudinally slidable relative to said cylinder, said member having a pawl mounted thereto for engagement with said piston, said pawl being pivotally mounted to said member and being slidable therewith, said trigger releasable retaining means being located rearwardly of said pawl and being pivotally mounted to said air gun so as to engage said piston rearwardly of where said pawl engages said piston, said cocking means being arranged with high mechanical advantage whereby the piston is fully cocked in a plurality of stages so reducing the effort otherwise needed to effect full cocking against said substantial driving force of said spring means.

4,367,724

BAKER'S OVENS

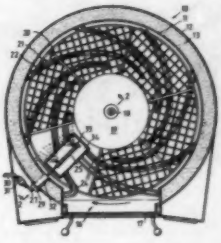
Paul E. Willett, 43 Porter St., Redcliffe, Queensland 4020, Australia

Filed Nov. 10, 1980, Ser. No. 205,298

Claims priority, application Australia, Nov. 16, 1979, PE1362; Jul. 1[illegible]1980, PE4523

Int. Cl.³ A21B *1/08*

U.S. Cl. 126—20 **6 Claims**



1. A baker's oven comprising an upright baking compartment having a side wall loading door and top and bottom walls, stationary electrical heating elements attached to said top and bottom walls, a horizontal support for bake goods in the lower portion of said compartment, vertical axis rotational drive means for the horizontal support in said compartment, a horizontal radially disposed intermittently operated steam injection unit on the side wall of the compartment above said support and having steam injection nozzle means thereon for directing steam in a direction away from the loading door and along the rotational path of movement of said support, said steam injection unit being disposed within a recess formed in said side wall of said compartment, said side wall being cylindrical and said support for bake goods being annular and being at an elevation below said steam injection unit, and a vertically shiftable horizontal lid in said compartment in superposed relationship with the support for bake goods and adapted to vertically traverse the side wall recess containing the steam injection unit without interferring the latter.

4,367,725

WOOD AND COAL BURNING HEATING METHOD AND APPARATUS

Duncan C. Syme, Chelsea, Vt., assignor to Vermont Castings, Inc., Randolph, Vt.

Continuation-in-part of Ser. No. 86,673, Oct. 19, 1979, Pat. No. 4,279,238. This application Feb. 28, 1980, Ser. No. 125,335

Int. Cl.³ F24C *1/14*

U.S. Cl. 126—77 **18 Claims**

1. A method for operating a heating apparatus for burning, in one configuration, coal and in a second configuration, wood, comprising the steps of

providing an inlet port in a frame of the heating apparatus having a cross-sectional area sufficiently large for providing the air required for the heating apparatus to efficiently burn coal,

directing said air from said inlet port to a fuel combustion chamber wherein said coal can be efficiently burned, and

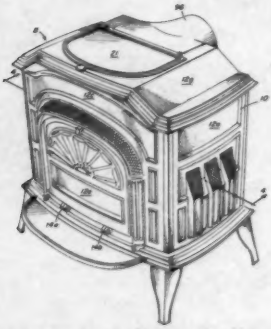
removably inserting into air supply paths to the fuel combustion chamber, at a position interior of the heating apparatus, and prior to supplying said air to said fuel combustion chamber, removable flow restriction elements for limiting and controlling the rate at which air can be supplied to said fuel combustion chamber when said fuel combustion chamber is employed for burning wood.

3. A heating apparatus for burning wood and for burning coal comprising

a heat conducting frame member having front, side, and back vertical wall panels, a top panel, and a bottom panel for enclosing a defined volume,

a fireback,

at least one removable plate for defining in combination with said fireback and at least one of said wall panels a first air supply network for providing air from an inlet port in said frame member to a fuel holding combustion chamber,



said air supply network having a first enclosed enlongated path for supplying air at a first side of the apparatus to said fuel holding combustion chamber,

said frame member having a flue gas exit aperture in gaseous communication with said fuel holding combustion chamber, and

removable restriction means having in an operating position structural connection with said removable plate and with at least one wall of said frame member and having a slot therein, said restriction means interfering in said first enclosed elongated path at a position which is interior of said frame member, and prior to supplying air to said fuel holding chamber, for restricting at said position along said first enclosed elongated path the available cross-sectional area of said enclosed elongated path for controlling the air flow volume through said first path.

4,367,726

SOLAR HOT WATER HEATER

Reed E. Maes, Jr., Ypsilanti, Mich., assignor to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Continuation of Ser. No. 13,839, Feb. 22, 1979, abandoned. This application Oct. 16, 1980, Ser. No. 197,415

Int. Cl.³ F24J 3/02

U.S. Cl. 126—422 **10 Claims**

1. A solar water heating device comprising:

an open-topped insulated, integrated solar collection and storage tank defining a cavity adapted to hold a quantity of water at ambient atmospheric pressure for collecting and storing solar energy;

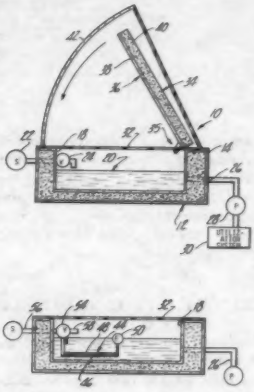
inlet water supply;

means for introducing water into said tank from said supply thereof to be at said atmospheric pressure within said tank;

outlet means for withdrawing heated water from said tank;

a pivoted insulated panel mounted to said tank for pivoting movement from a first position overlying the opening of said tank to a second position tilted upwardly from said opening;

water level control means producing a variable level of water in said insulated tank including means within said tank for varying the water in said tank with the temperature of said water, such as to increase the level of water in said tank upon said water being heated to a predetermined temperature level;



whereby said tank is mounted to receive solar radiation of said insulated panel pivoted to said closed position during periods of slow solar radiation and storing said water in a heated condition in said tank, and said capacity increases with increased levels of solar radiation by increased levels of water in said tank.

4,367,727

COLLECTORS OF SOLAR ENERGY TRAPPING DEVICES

Alfredo B. Llorach, Avenida Sindical 22, Palma de Mallorca, Spain

Filed Aug. 19, 1980, Ser. No. 179,550

Claims priority, application Spain, Aug. 21, 1979, 483.541

Int. Cl.³ F24J 3/02

U.S. Cl. 126—449 **1 Claim**

1. A solar collector comprising:

a spherical transparent receptacle defining a spherical space and having an opening at the bottom thereof;

an outer conduit connected to said receptacle at said opening and depending downwardly from said receptacle;

an inner conduit coaxial with said outer conduit extending through said opening and into said space, said inner conduit terminating at an upper end thereof near a center of said sphere, said inner conduit having a plurality of openings therein in said space;

a plurality of spherical layers of metallic filamentation material having a black solar radiation absorbing coating disposed in said space and centered about the center of said space and around said inner conduit and over said inner

conduit openings, said plurality of layers having progressively increasing density of filamentatious material toward the center of said space; and

a spherical thermal protection shell surrounding and at all locations spaced from said transparent spherical receptacle having an opening at the bottom thereof for the passage of said outer conduit;

said inner conduit adapted for receiving a heat transfer fluid and discharging the fluid through said filamentatious material into said space, said outer conduit adapted for passing the fluid out of said space.

4,367,728

ISOLATION APPARATUS

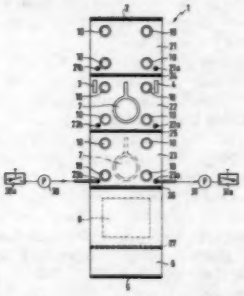
Hans G. Mutke, Drygalskiallee 117, 8000 Munich, Fed. Rep. of Germany

Filed Sep. 5, 1980, Ser. No. 184,299

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1979, 2936256

Int. Cl.³ A61M *16/02*

U.S. Cl. 128—1 R **15 Claims**



1. Isolation apparatus useful for medical, biological, chemical, physical or the like experiments and treatments in a sealed surrounding, comprising a flexible envelope in the form of an elongated sack; the sack being divided at spaced intervals along its length into at least two sections; a transparent window defined in the sack at at least one section of the sack for permitting viewing into the sack therethrough; a glove secured in sealed manner to the sack at at least said one section of the sack for enabling an operator to have access to an object connected to the sack at least said one section from the outside thereof; ventilation means in the sack for ventilating and inflating the sack with controllable pressure; a sealable passage opening into a side of the sack in said other section for through passage and holding therein of articles in the sack; at least one access opening into said one section for passing an object therethrough and into the sack wherein said object is adapted to be held in said access opening; said at least one access opening having means for airtight engagement of the periphery thereof about an object adapted to project and be held therein; selectively openable and closable sealing means at said spaced intervals along the length of and intermediate the length of the sack for dividing the sack into the at least two sections whereby the sections are separate from and selectively sealable from each other and are sealed from the environment.

4,367,729

ENDOSCOPE PROVIDED WITH AN ELONGATE MEDICAL TREATING INSTRUMENT UTILIZING LASER BEAMS

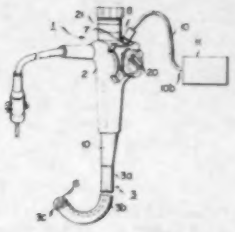
Hisao Ogiu, Oume, Japan, assignor to Olympus Optical Co. Ltd., Tokyo, Japan

Filed Oct. 17, 1980, Ser. No. 197,806

Claims priority, application Japan, Oct. 22, 1979, 54-146156[U]

Int. Cl.³ A61B *1/06*

U.S. Cl. 128—6 **6 Claims**



1. An endoscope provided with an elongate medical treating instrument utilizing laser beams comprising:

a control section having two ends;

an elongate flexible insertion section having two ends, one of which is fixed to one of said two ends of said control section, and the other of which constitutes a distal end part and is provided with a distal end face;

a transparent glass cover member which is mounted in said distal end face of said distal end part and has a rear face;

a channel extending through said control section and said insertion section;

an elongate laser guide which extends through said channel and has two ends, one of which is connected to a laser oscillator provided outside of said endoscope and stop means provided on said laser guide

a holder mounted on the other end of the control section and having an end wall; and an elastically expansible member disposed in said holder between said stop means and the end wall of said holder to urge the laser guide toward said other end of said insertion section of said endoscope and cause the other end of the laser guide to tightly abut against said rear face of said glass cover member no matter how much said insertion section is bent.

4,367,730

WATER PROOF COVER FOR ENDOSCOPE

Hitoshi Tanaka, Iwatsuki, Japan, assignor to Fuji Photo Optical Co., Ltd., Japan

Filed Oct. 30, 1980, Ser. No. 202,116

Claims priority, application Japan, Oct. 31, 1979, 54-150091[U]

Int. Cl.³ A61B *1/06*

U.S. Cl. 128—6 **9 Claims**

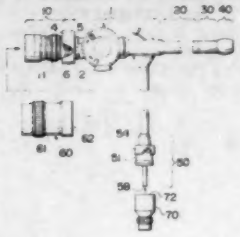
1. Structure for waterproofing a portion of an endoscope, said endoscope including an operating portion and a portion to be waterproofed, comprising:

an annular connecting means for forming a connecting neck on an endoscope between an operating portion thereof and a portion to be waterproofed, said annular connecting means having a packing ring mounted therearound;

a protective cover fixed to said connecting means for covering and protecting said packing ring, said protective cover forming a space surrounding said packing ring;

a waterproof cover having a bottom and an open end opposite to said bottom, said open end being adapted for insertion into said space, said waterproof cover having a

smooth engaging face on an interior portion thereof for liquid tightly engaging with said packing ring; and



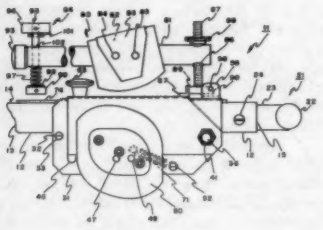
means for firmly mounting said waterproof cover on said connecting means at a position where said smooth engaging face is liquid-tightly engaged with said packing ring.

4,367,731

LOWER BODY SUPPORTING MECHANISM FOR A TILTABLE BODY EXERCISER

S. Morgan Barber, 138 N. Hwy. 95, Yerington, Nev. 89447

Filed Apr. 6, 1981, Ser. No. 251,484
Int. Cl.³ A61F *5/00*
U.S. Cl. 128—71 **13 Claims**



1. In a therapeutic device for the human body in which a main frame pivotally mounts a body supporting structure for longitudinal tilting movements, said body supporting structure having an elongated central frame member, an upper body supporting portion adapted for secure attachment to the upper end portion of said elongated central frame member, and a lower body supporting portion mounted upon and slidable along the lower end portion of said elongated central frame member, the improvement wherein said lower body supporting portion comprises:

(a) a carriage member mounted upon and slidable along the lower end portion of said elongated central frame member, said carriage member having upper and lower end portions;

(b) step means attached to the lower end portion of said carriage member, said step means being adapted to extend under each foot to form a support limiting endwise movement of the body in a downward direction when the body supporting structure is tilted so as to elevate the head of a body thereon above a horizontal position;

(c) a pair of ankle-area embracing members adapted for attachment to said carriage member intermediate its upper and lower end portions, said ankle-area embracing members extending laterally from each side of said carriage member; and

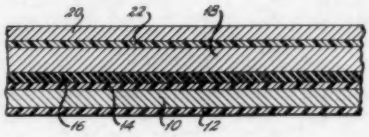
(d) manually releasable locking means pivotally mounted with respect to the lower end portion of said carriage member, said manually releasable locking means including a knob with locking pin located adjacent the upper end portion of said carriage member, said locking pin being adapted for insertion into and removal from a selected one of a number of spaced-apart holes located within the lower end portion of said elongated central frame member, said locking pin preventing sliding movement of said carriage member along said elongated central frame member when inserted into a selected one of the holes within said elongated central frame member.

4,367,732

SKIN BARRIER

Finn Poulsen, Vaerlose, and Peter Samuelsen, Rungsted Kyst, both of Denmark, assignors to Coloplast A/S, Espergaerde, Denmark

Filed Nov. 30, 1981, Ser. No. 325,788
Claims priority, application Denmark, Dec. 5, 1980, 5209/80
Int. Cl.³ A61L *15/00*
U.S. Cl. 128—156 **10 Claims**



10. A skin barrier, essentially consisting of the following elements in combination:

(A) a non-adhesive, substantially water-impervious, elastic film, secured to one of the faces of an adhesive layer of

(B) an adhesive material which is a gel-like, at least weakly elastic mixture consisting of

(I) a continuous phase consisting of

(a) at least one physically cross-linked elastomer selected from the group consisting of styrene-olefin-styrene block copolymers,

(b) at least one hydrocarbon tackifier resin selected from the group consisting of polymers and copolymers of cyclopentadiene, dicyclopentadiene, α-pinene and β-pinene,

(c) a polar plasticizer for the elastomer, being copatible at least with its styrene blocks and decreasing the upper glass transition temperature of the styrene blocks of the elastomer,

(d) an antioxidant, and

(e) 0–25%, based on the weight of the adhesive material, of an oily extender,

(II) dispersed in the continuous phase a discontinuous phase consisting of at least one hydrocolloid which is swellable in water,

(C) a detectable protective cover secured to the other face of the adhesive layer,

the aggregate of said water-impervious elastic film (A) and the adhesive material (B) adhering thereto, but without the protective layer (C), having a low resistance to quick deformation and after deformation a rapid recovery to substantially its original shape.

4,367,733

ANKLE SUPPORT

Lawrence T. Stromgren, 2917 Hillcrest Dr., Hays, Kans. 67601

Filed Jul. 24, 1980, Ser. No. 172,073
Int. Cl.³ A61F *13/06*
U.S. Cl. 128—166 **9 Claims**

1. An ankle wrap comprising:

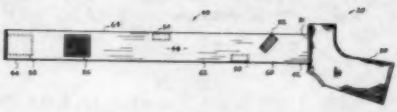
a socklike sheath adapted to slip over the foot of the wearer;

an elongated panel having first and second end portions and made of an elastic material for a compressive wrapping about the ankle and arch of said foot in a predetermined manner to provide lift to said arch and first and second

heel locks to said foot on the respective lateral sides of said ankle;

means for connecting said first end portion of said panel to said sheath;

heel lock maintenance means on said wrap for holding in an operative position at least one of said heel locks presented



by said elongated panel and including fastener elements on said panel disposed about said foot during said wrapping for mutual interengagement; and

means along said second end portion for securing said portion to said foot upon conclusion of said wrapping whereby to maintain said at least one heel lock on said foot of the wearer.

4,367,734

Y-FITTING IN THE PATIENT SYSTEM OF RESPIRATORS

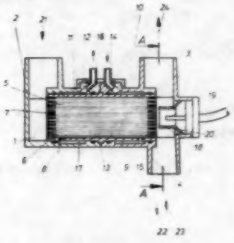
Frank Benthin, Lübeck-Hamberge, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 5, 1981, Ser. No. 231,806

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1980, 3032438

Int. Cl.³ A61M *11/04*

U.S. Cl. 128—204.13 **4 Claims**



1. A Y-fitting for the patient system of a respirator, comprising, a housing, a membrane humidifier mounted within said housing, said membrane humidifier including an exchangeable element with a plurality of water vapor permeable hollow filaments and mounting means for mounting said filaments in side-by-side and spaced relationship in said element thereby defining a flow path for breathing gas therethrough and a water space therearound and means supplying water to said water space for externally charging said filaments with water circulating therearound, said housing comprises a first housing part including a first externally tapered connection for receiving a flexible inspiration tube and means for surrounding and sealably securing one end of said exchanged element therein providing a gas flow path between said first externally tapered connection and said filaments, a second housing part including an internally tapered connection for receiving a flexible tube connecting to the patient and a second externally tapered connection for receiving a flexible expiration tube and communicating with said internally tapered connection and means for surrounding and sealably securing the opposite end of said exchangeable element therein providing a gas flow path between said filaments and said internally tapered connection and said second externally tapered connection, a ring detachably connecting said first housing part to said second housing part, said first housing part having a first tube connection and a first recess portion surrounding said exchangeable element and communicating with said first tube connection, said second housing part having a second tube connection and a second recess portion surrounding said exchangeable element and communicating with said second tube connection and passage means in said mounting means communicating with said first and second recess portions whereby water is circulated from said first tube connection and recess portion through said space and back through said second recess portion and said second tube connection of said second houging part.

4,367,735

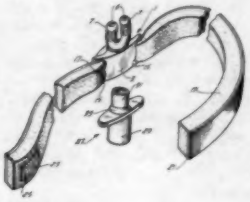
NASAL CANNULA

Carmelo Dali, Chesire, Conn., assignor to Novametrix Medical Systems, Inc., Wallingford, Conn.

Filed Dec. 31, 1979, Ser. No. 108,667

Int. Cl.³ A61M *25/00*

U.S. Cl. 128—207.18 **9 Claims**



1. A nasal cannula for aiding the breathing of a patient by use of a respirator comprising:

a body made of a soft pliable material and including two hollow tubular bored prongs and a base, each prong having a nasal end and a respirator end, the respirator ends of the prongs merging adjacent said base, said base having an axial bore in communication with the bores of said prongs, the periphery of substantially the entire length of each prong intermediate said nasal and respirator ends being provided on its outer circumference with axially displaced circular ribs integrally formed and occupying planes substantially normal to the respective longitudinal axes of said tubular prong to permit flexing of each prong and substantially maintain the original cross-sectional diameter of the tubular bored prongs.

4,367,736

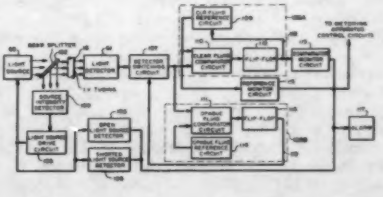
SYSTEM FOR DETECTING BUBBLE FORMATION IN CLEAR AND OPAQUE FLUIDS

John E. Gupton, Vernon Hills, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 25, 1980, Ser. No. 181,063

Int. Cl.³ A61M *5/14*

U.S. Cl. 128—214 E **16 Claims**



1. A bubble detector for detecting a fluid absence in either

clear or opaque fluid in the transparent tubing of an administration set, said bubble detector comprising, in combination:

a light source arranged at one side of the tubing;

a light detector generally arranged at the opposite side of the tubing for receiving light from said source having passed through the tubing, said detector being adapted to generate an output signal level indicative of the intensity of light incident on said detector, the level of said output being above a first predetermined level in the presence of a clear fluid in the tubing, and being below a second predetermined level which is lower than said first predetermined level in the presence of an opaque fluid within the tubing; and being between said first and second levels in the presence of a bubble or absence of fluid in the tubing, wherein said second level is selected so that when inverted it is higher than said first level;

detector output switching means having an inverting signal input and a signal input connected to said detector output, said switching means being adapted to output said detector output signal in the absence of an inverting signal input and to output an inverted detector output signal in the presence of an inverting signal input,

first and second comparision means connected to the output of said detector switching means, wherein said second comparison means is adapted to apply an inverting signal to said detector switching means in the event that said detector switching means output level falls below said second predetermined level, thereby causing said detector switching means to output an inverted detector output signal, and wherein said first comparision means is adapted to provide a control signal in the event that the detector switching means output level rises above said first predetermined level, and

alarm circuit means adapted to issue an alarm in the event that said first comparision means fails to issue a control signal within a predetermined period of time.

4,367,737

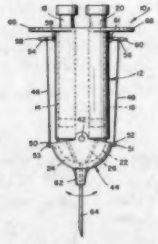
MULTIPLE BARREL SYRINGE

George Kozam, 234 E. Clinton Ave., Tenafly, N.J. 07670, and Pat Romanelli, 224 Brook St., Harrington Park, N.J. 07640

Filed Apr. 6, 1981, Ser. No. 251,311

Int. Cl.³ A61M *5/00*

U.S. Cl. 128—215 **10 Claims**



1. A multiple barrel syringe for the selective dispensing of fluids, comprising

a body portion having a pair of independent fluid-retaining bores, a pair of individually depressible plungers extending respectively into said bores, and a first fluid conduit and second fluid conduit communicating with the respective bores and opening through the bottom surface of said body portion at spaced locations thereon,

a needle carrier member mounted on said body portion below the bottom surface thereof and comprising an upper body portion, a depending portion mounting a hollow needle, and a single needle bore extending through said upper body portion and communicating with said hollow needle,

and means movably mounting said needle carrier member on said syringe body portion for movement of said needle carrier member between a first operative position in which said needle bore is in registry with and communicates with said first fluid conduit and said second fluid conduit is covered over and blocked by the upper body portion of said needle carrier member, and a second operative position in which said needle bore is in registry with and communicates with said second fluid conduit and said first fluid conduit is covered over and blocked by the upper body portion of said needle carrier member.

4,367,738

PRE-FILLED SYRINGE FOR ABUSABLE DRUGS

Robert Legendre, Piscataway, and Steven Schlossberg, East Windsor, both of N.J., assignors to Janssen Pharmaceutica Inc., New Brunswick, N.J.

Filed Oct. 28, 1981, Ser. No. 315,800

Int. Cl.³ A61M *5/00*

U.S. Cl. 128—218 PA **3 Claims**

1. A disposable, non-reusable, pre-filled syringe comprising:

(a) a barrel having a first open end having a restricted opening and a second end adapted to receive a hypodermic needle;

(b) a piston assembly within said barrel comprising a piston and plunger rod attached to the piston and extending out through the restricted opening of the first open end of the barrel, said plunger rod having a plurality of short, stiff, flexible spikes attached thereto at an oblique angle away from the piston; and

(c) a fluid to be injected contained within said barrel between said piston and said second end of the barrel,

whereby a push on the plunger rod will inject the fluid through the hypodermic needle since the oblique-angled; spikes will contract to pass through the restricted opening, while a pull on the plunger rod will be resisted by the oblique-angled spikes, thus preventing aspiration of fluid into the barrel.

4,367,739

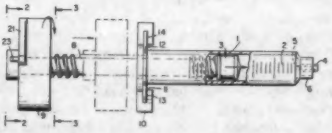
SYRINGE

Harry H. LeVeen, 321 Confederate Cir., Charleston, S.C. 29407; Eric G. LeVeen, 3-3 Woodlike Rd., Albany, N.Y. 12203, and Robert F. LeVeen, 312 Lombard St., Philadelphia, Pa. 19147

Filed Apr. 20, 1981, Ser. No. 255,352

Int. Cl.³ A61M *1/00*

U.S. Cl. 128—236 **7 Claims**



1. A manually actuable syringe comprising:

a hollow body with an interior wall, a fluid transport opening at one end thereof and a piston receiving opening at the opposite end thereof;

a piston within said body which has fluid tight engagement with said interior wall, said piston being slidable toward and away from said transport opening;

a manually operable actuating rod extending at one end from

said piston receiving opening and slidable within said body, said rod having means engageable with said body for moving said rod toward said transport opening when said rod is rotated and being connected to said piston at one end of said rod;

a manually engageable knob rotatably mounted on said rod at the end thereof opposite from the end thereof which is connected to said piston;

spring means interconnecting said knob with said rod and opposing rotation of said knob with respect to said rod;

means adjacent said knob rotatable with said rod;

means on said knob adjacent said means rotatable with said rod for indicating rotation of said knob relative to said rod and thereby, indicating the pressure applied to fluid within said body of said piston.

4,367,740

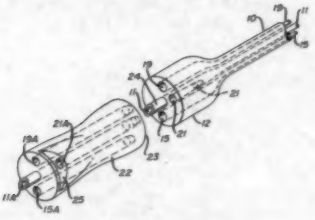
COMBINATION CATHETER CYSTOMETER SYSTEM AND GASTRIC FEEDING DEVICE

Constant J. Evanoski, III, 868 36th St., Altoona, Pa. 16601

Filed Dec. 10, 1980, Ser. No. 214,640

Int. Cl.³ A61M *25/00*

U.S. Cl. 604—43 **3 Claims**



1. An improvement in a catheter adapted for insertion into a body passage of restricted size and also usable in a cystometer system and in a gastric feeding device and comprising an elongated flexible shaft, a drainage lumen defined by said flexible shaft and extending from a first opening adjacent the distal end of the flexible shaft to the proximal end thereof, an inflatable balloon about said flexible shaft inwardly from the distal end thereof, a pressure lumen defined by said flexible shaft and extending from said balloon to the proximal end of said flexible shaft, an irrigating lumen defined by said flexible shaft communicating with said drainage lumen in the distal end of said flexible shaft and extending to the proximal end of said flexible shaft, the improvement comprising means for introducing sterile fluid into said drainage lumen and thereby into said body passage while said catheter is inserted in said body passage, said means including a second opening in said drainage lumen adjacent said proximal end of said flexible shaft, a passageway in said proximal end of said flexible shaft communicating with said second opening and with the exterior of said proximal end of said flexible shaft and removable means normally closing said second opening.

4,367,741

DISPENSER POWERED BY CROSS-LINKED HYDROPHILIC POLYMER GRAFTED TO HYDROPHILIC POLYMER

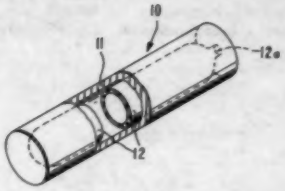
Alan S. Michaels, San Francisco, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Filed Dec. 22, 1980, Ser. No. 218,729

Int. Cl.³ A61M *7/00*

U.S. Cl. 128—260 **12 Claims**

1. A dispenser comprising: a housing formed of a laminate comprising a layer of a cross-linked hydrophilic polymer grafted to a layer of a noncross-linked hydrophilic polymer; a container within the housing, said container made of a material changeable from a storing capacity to a substantially emptied capacity over time; an outlet mean in the container that communicates with the container and the exterior of the dispenser, and wherein, when the dispenser is in operation in the environment of use, the dispenser releases its contents in response to



the laminate absorbing fluid from the environment and expanding, thereby exerting pressure on the container which changes from a storing capacity to a substantially emptied capacity and dispenses its contents through the outlet means from the dispenser.

4,367,742

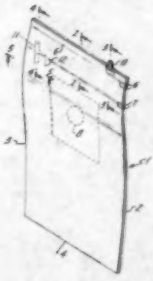
OSTOMY BAG

Murray Orastein, 115 Fairfield Dr., Short Hills, N.J. 07480

Continuation-in-part of Ser. No. 43,170, May 29, 1979, abandoned. This application Sep. 29, 1980, Ser. No. 192,124

Int. Cl.³ A61F *5/44*

U.S. Cl. 128—283 **7 Claims**



1. An ostomy bag of the type adapted to be attached to the body of the patient and formed of two thin sheets of tough but pliable material having the general characteristics of polyethylene, welded together at the peripheral edges thereof with one sheet constituting the body-side of the bag and the other sheet the outer-side of the bag and having, further, a small intake orifice near the top of the body-side sheet, a mounting pad connected to the ostomy bag to the body of the patient, and an integrally formed escape opening for accumulated gas, the improvement comprising:

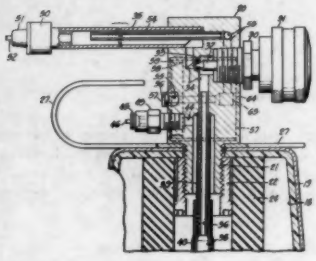
a gas permeable, re-openable and re-sealable deodorant chamber intermediate the gas escape opening and a gas entrance opening into the chamber from the ostomy bag, said bag further comprising a deodorant carrier having substantially the same volume and configuration as the inside of the said deodorant chamber and said carrier completely filling said chamber.

4,367,743

SELF-PRESSURIZING CRYOGENIC APPARATUS AND METHOD

Harold D. Gregory, West Covina, Calif., assignor to Virginia M. Gregory, West Covina, Calif.

Continuation of Ser. No. 936,909, Aug. 25, 1978, abandoned, which is a division of Ser. No. 688,962, May 24, 1976, abandoned. This application Dec. 22, 1980, Ser. No. 218,531
Int. Cl.³ A61B 17/36
U.S. Cl. 128—303.1 44 Claims



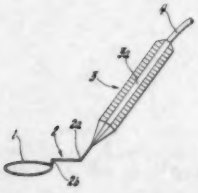
1. In a cryogenic unit, a spray jetting nozzle, a pressure-regulated source of liquid cryogen under substantially uniform pressure, conducting means constantly connecting said source to said nozzle, and manually operable flow control means continuously assembled to said unit and in communication with said conducting means and operable to control the pressure in said conducting means without varying the pressure of said pressure-regulated source of liquid cryogen and effective to cause said cryogen to issue selectively substantially instantaneously from said nozzle as a continuous stable jet of gas or as a continuous stable spray of finely divided liquid particles and gas.

4,367,744

MEDICAL INSTRUMENT, AND METHOD OF UTILIZING SAME

Gary M. Sole, 510 Overbrook, Bloomfield Hills, Mich. 48013

Filed Dec. 29, 1980, Ser. No. 221,065
Int. Cl.³ A61B 17/38
U.S. Cl. 128—303.1 12 Claims



1. A medical instrument, comprising:

cautery means for burning the anterior lens capsule of an eye at the periphery of a portion of said capsule to be removed during surgery;

said cautery means comprising a cautery portion formed of a fine wire and shaped so as to correspond to a peripheral part of said portion of said capsule to be removed;

a handle portion;

a substantially rigid elongated stem portion extending from said cautery portion and connected with said handle portion, said stem portion being electrically-conductive and covered with an electrically-insulative material;

said cautery portion having a dimension corresponding to the diameter of the pupil of an eye to be operated upon;

said stem portion having a dimension which is substantially inversely proportional to said dimension of said cautery portion; and

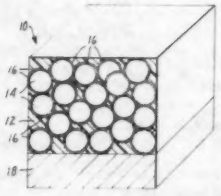
means for connecting said cautery portion, via said electrically-conductive stem portion, with an electrical power source.

4,367,745

CONFORMABLE ELECTRICALLY CONDUCTIVE COMPOSITIONS

Norbert A. Welage, Forest Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 27, 1980, Ser. No. 153,413
Int. Cl.³ A61B 17/36
U.S. Cl. 128—303.13 12 Claims



1. In a comformable conductive composition comprising: (a) a soft polymeric binder forming a cohesive matrix having a Shore A hardness of less than about 40; (b) a plurality of insoluble, deformable, generally nonreactive microspheres having Shore A hardness less than about 40 dispersed in said binder in an amount from about 20 to 60 percent by weight of said composition; and (c) electrically conductive particles dispersed in said binder in an amount effective to provide at least one electrically conductive pathway through said composition; the improvement wherein said polymeric binder is polar, said microspheres are nonpolar, said conductive particles are oleophilic, and said conductive particles have an affinity for said microspheres and concentrate at the surface of said microspheres.

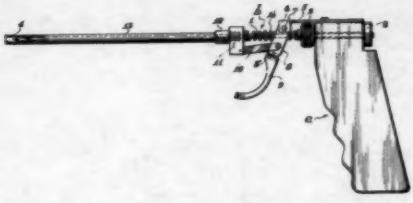
12. In a grounding plate electrode comprising an electrically-conductive metal film having an upper surface and a lower, skin-contacting surface; means for attaching a lead wire to said metal film; a backing laminated to said upper surface; and a layer of a conformable, electrically-conductive composition on said skin-contacting surface; the improvement wherein said electrically conductive composition comprises: (a) a soft polar polymeric binder forming a cohesive matrix having a Shore A hardness of less than about 40; (b) a plurality of insoluble, deformable, generally non-reactive, non-polar microspheres having a Shore A hardness less than about 40 dispersed in said binder in an amount from about 20 to 60 percent by weight of said composition; and (3) oleophilic electrically conductive particles dispersed in said binder in an amount effective to provide at least one electrically conductive pathway through said composition, said conductive particles having an affinity for said microspheres and being concentrated at the surface of said microspheres.

4,367,746

CLIP-HOLDER INSTRUMENT FOR CLIPPING BLOOD VESSELS

Victor E. Derechinsky, Sarmiento St. No. 2176, Buenos Aires, Argentina

Filed Dec. 8, 1980, Ser. No. 214,105
Claims priority, application Argentina, Dec. 11, 1979, 279236
Int. Cl.³ A61B 17/12
U.S. Cl. 128—325 8 Claims



1. A clip-holder instrument for clipping blood vessels comprising, in combination:

(a) a grip handle, said grip handle having an upper portion and a bottom portion, said bottom portion being a pistol butt-shaped member;

(b) operating means for operating said grip handle, said operating means being assembled on said upper portion of said grip handle;

(c) a clip;

(d) a rod and tube assembly means for clamping and releasing said clip, having a rod, said rod having a front portion and a rear portion, said rear portion passing through said upper portion of said grip handle, said front portion forming a hooking means for hooking said clip, said rod being freely rotatable and having an operation knob joined on said rear portion of said rod opposite said grip handle, said operation knob controlling the rotation of said rod; and

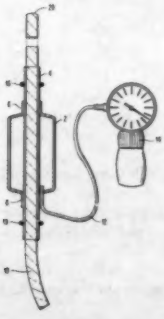
(e) lever means and a retraction member for operating said rod and tube assembly, said lever means having a power arm, said power arm being a trigger-shaped member, said lever means extending from said upper portion of said grip handle and being connected to said retraction means.

4,367,747

PNEUMATIC DILATATOR FOR INTRODUTION INTO THE ESOPHAGUS

Lothar Witzel, Hangweg 8 A, D-1000 Berlin 28, Fed. Rep. of Germany

Filed Oct. 1, 1980, Ser. No. 193,071
Int. Cl.³ A61M 29/08
U.S. Cl. 128—344 6 Claims



1. A pneumatic dilatator for introduction into the esophagus and for treatment of a constricted segment of the intestinal system of a living being, comprising in combination:

(a) an inflatable balloon of generally cylindrical shape having two cylinder end faces opposed to each other, said balloon consisting throughout of a flexible material of small elasticity, thereby limiting the diameter of said balloon to a given upper value of approximately 40 mm when said balloon is inflated in said constricted segment at an internal excess pressure of approximately 300 mmHg;

(b) a tube of a flexible material having a given length, said tube being passed through said balloon and said balloon being secured thereon in the range of said cylinder end faces, said balloon thereby extending along said tube at a length of approximately 150 mm;

(c) a gastroscope passed through said tube for visual control of the introduction of the dilatator into said constricted segment and/or of an inflation of said balloon;

(d) means for detachably mounting said tube on said gastroscope;

(e) a flexible inflation pipe opening into said balloon; and

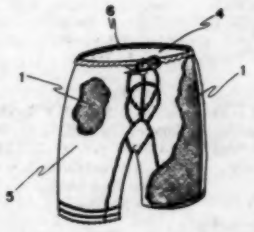
(f) a blood pressure manometer including a squeeze bulb connected to said inflation pipe for inflating said balloon when positioned in said constricted segment.

4,367,748

ANATOMIC-CORRECTING GIRDLE

Jose M. Masso Remiro, Sor Eulalia de Anzizu, 11 Barcelona, Spain

Filed May 20, 1981, Ser. No. 265,567
Claims priority, application Spain, Mar. 4, 1981, 256.654[U]
Int. Cl.³ A41C 1/04, 1/00
U.S. Cl. 128—521 1 Claim



1. An anatomical correcting girdle comprising:

a composite inner body including an inner layer of ribbed knitted fabric joined to an outer layer of latex, said knitted fabric being stretchable in all directions and having ribs oriented longitudinally;

an outer body of knitted fabric stretchable in all directions and having a less energetic gripping capacity than said inner body, said outer body having an adorned surface and aesthetic appearance; and

said outer body comprising a cover over said inner body and being joined thereto only at the waist.

4,367,749

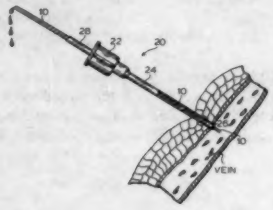
NONTHROMBOGENIC ARTICLES AND METHOD OF PREPARATION

Betty J. Dudley, deceased, late of Durham, N.C. (by Kenneth H. Dudley, executrix), and Joel L. Williams, Cary, N.C., assignors to Becton, Dickinson & Company, Paramus, N.J.

Division of Ser. No. 76,201, Sep. 17, 1979, Pat. No. 4,302,368, which is a continuation-in-part of Ser. No. 899,342, Apr. 24, 1978, abandoned, and a continuation of Ser. No. 752,247, Dec. 20, 1976, abandoned, and a continuation-in-part of Ser. No. 888,951, Mar. 22, 1978, abandoned, which is a continuation of Ser. No. 764,474, Jan. 31, 1977, Pat. No. 4,116,898. This application Dec. 3, 1980, Ser. No. 212,475

Int. Cl.³ A61B *19/00*

U.S. Cl. 128—637 **1 Claim**



1. A blood compatibility determination method which comprises

providing a test material in the form of a hollow tube having first and second open ends and a length exceeding the length of a cannula hereinafter described;

providing said cannula of a size and dimension to receive in its bore in a close fitting relationship said tube, said cannula having first and second ends and a bore communicating between said first and second cannula ends;

inserting the first end of said cannula into the blood vessel of a living mammal;

inserting the first end of said tube into the second end of said cannula, through said bore and beyond said first end of said cannula, whereby the first end of said tube is positioned in said blood vessel while leaving the second open end of the tube outside of the mammal's body, whereby blood flows from said blood vessel, through said first end of said tube, through said tube and out of the open second end of said tube without contacting any solid surface other than the surface of said tube; and

measuring the time period between the initial flow of blood out of the second end of said tube to cessation of said flow.

4,367,750

DEVICE FOR OBTAINING STOOL SAMPLES

Robert A. Levine, 31 Pilgrim, Guilford, Conn. 06437

Filed Nov. 3, 1980, Ser. No. 203,083

The portion of the term of this patent subsequent to Apr. 7, 1998, has been disclaimed.

Int. Cl.³ A61B *10/00*

U.S. Cl. 128—638 **6 Claims**

1. A stool sampling device for obtaining stool samples, said device comprising:

(a) a first sheet of transparent pliant impermeable material;

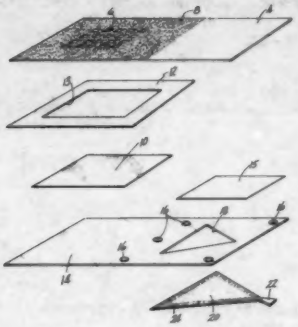
(b) a pad secured to one side of said first sheet, said pad being operable to receive a stool smear;

(c) a second sheet of pliant material disposed on said first sheet, said second sheet overlying said one side of said first sheet, and said second sheet including stool volume controlling openings therethrough aligned with said pad;

(d) releasable adhesive means securing said second sheet to said first sheet whereby said second sheet can be peeled off of said first sheet after a stool smear has been deposited on said pad;

(e) means for hermetically sealing said pad within said first sheet after a stool smear has been deposited on said pad;

(f) means forming an opening in said first sheet which opening is aligned with said pad when the latter is sealed within said first sheet;



(g) a pliant impermeable cover sheet hermetically sealing said opening in said first sheet; and

(h) said transparent first sheet allowing visual observation of the test results therethrough on a side of said pad opposite said opening.

4,367,751

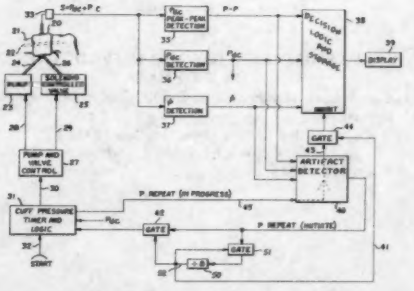
APPARATUS AND PROCESS FOR PRODUCING ARTIFACT EFFECT ON SPHYGMOMETRIC INFORMATION

William T. Link, Berkeley; Jerry D. Haney, Sunnyvale, and William Jansen, Palo Alto, all of Calif., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 27, 1976, Ser. No. 754,388

Int. Cl.³ A61B *5/02*

U.S. Cl. 128—682 **14 Claims**



1. Apparatus for producing information indicative of the diastolic and systolic pressures of a living test subject comprising:

means for controllably applying a selectively changeable pressure to the test subject adjacent a blood vessel;

means for measuring a time dependent fluctuating value representative of pulsatile pressure within the blood vessel;

means for measuring a value representative of the selectively changeable pressure applied externally adjacent the blood vessel;

signal producing means responsive in a predetermined manner to said pulsatile pressure representing value as a func-

tion of the applied pressure for providing an output indication of the diastolic and systolic pressures of the living test subject;

means for detecting an artifact value in at least said pulsatile pressure representing value across at least the diastolic-systolic pressure range of said test subject and providing a control indication thereof;

means responsive to a said artifact indication for inhibiting said response in said predetermined manner of said signal processing means to said detected artifact value;

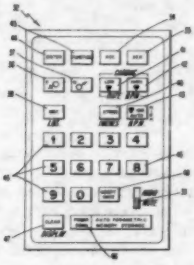
control means associated with said pressure applying means for normally changing said applied pressure in a single direction across at least the diastolic-systolic pressure range of said test subject and for automatically repeating the applied pressure at which an indication of an artifact occurred through a predetermined range within and normally less than the pressure range previously applied in response to each said artifact indication across at least the diastolic-systolic pressure range of said test subject, thereby to seek artifact-free values of said pressures.

4,367,752

APPARATUS FOR TESTING PHYSICAL CONDITION OF A SUBJECT

Oscar Jimenez, Miami, and Frank J. Bianco, Pembroke Pines, both of Fla., assignors to Biotechnology, Inc., Miami, Fla.

Filed Apr. 30, 1980, Ser. No. 145,765
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—689 **53 Claims**



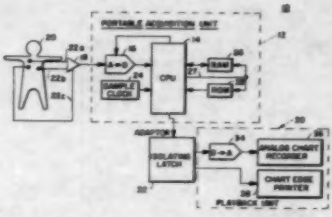
31. Apparatus for testing the physical condition of a subject comprising means adapted to be mounted on the subject for monitoring and deriving a first signal indicative of heart activity of the subject, an electronic instrument housing adapted to be carried by the subject, means for coupling said first signal to terminals on the instrument housing, said housing including: (a) an inertial member for monitoring the quantity of repetitive actions taken by a limb of the subject and for deriving a second signal indicative of said quantity, (b) a keyboard for enabling signals to be derived indicative of numerical quantities associated with a plurality of physiologically relevant parameters of the subject, (c) a clock source of deriving timing signals, (d) digital computer means responsive to the first, second, timing and keyboard signals for deriving plural digital output signals indicative of different physical activities of the tested subject, (e) visual digital indicator means, (f) plural key switches, each associated with a different one of the physical activities, and (g) means responsive to activation of the plural key switches for selectively coupling different ones of the plural output signals to the visual indicator means so only one of the output signals is supplied to the indicator means at a time.

4,367,753

APPARATUS FOR MONITORING AND STORING HEARTBEATS OF A PATIENT

Thomas L. Jirak, Plymouth, Minn., assignor to Medtronic Inc., Minneapolis, Minn.

Filed Jan. 23, 1980, Ser. No. 114,594
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—708 **41 Claims**



1. Apparatus for evaluating electrical signals indicative of a patient's heart activity with a set of criteria indicative of the waveform of a QRS complex, said apparatus comprising:

(a) means coupled for receiving and sampling a patient's heart signal at selected intervals in real time for providing a sequence of sampled heart signals of a single QRS complex; and

(b) evaluating means for comparing one sampled heart signal with a subsequent sampled heart signal of the same QRS complex to determine whether the relation therebetween meets said criteria of a valid QRS complex waveform.

4,367,754

METHOD OF DISPENSING A BLOOD SAMPLE

David S. Akhavi, Los Angeles, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Division of Ser. No. 25,979, Apr. 2, 1979, Pat. No. 4,266,558. This application Dec. 29, 1980, Ser. No. 220,571
Int. Cl.³ A61B *5/14*; B65D *35/28*; G01N *1/10*
U.S. Cl. 128—763 **1 Claim**

1. A method of segmenting and dispensing a blood sample to be tested from a flexible tube reservoir containing an air contaminated blood portion comprising the steps of:

(a) positioning a clamp along a flexible tube reservoir containing a blood sample intermediate the volume of the blood sample to be tested and the contaminated blood portion;

(b) pinching the clamp to segment the air contaminated blood sample portion from the testing blood sample portion;

(c) moving the pinched clamp along the flexible tube reser-

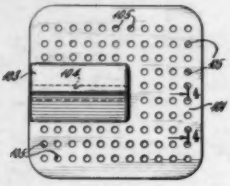
voir to dispense the testing blood sample from the flexible tube reservoir.

4,367,755

STIMULATING ELECTRODE

William D. Bailey, Wayzata, Minn., assignor to Stimtech, Inc., Minneapolis, Minn.

Filed Jan. 31, 1979, Ser. No. 8,011
Int. Cl.³ A61N 1/04
U.S. Cl. 128—798 3 Claims



1. A two layer transcutaneous electrical nerve stimulation electrode for delivery of electrical energy to a patient and having a first layer and a second layer wherein said two layers are interconnected so that when said electrode is removed from a patient the two layers will not tear apart comprising:

(a) said first layer including an electrically conductive, flexible adhesive pad, which is capable of melting upon the application of heat and solidifying when cooled to facilitate the attachment of said adhesive pad to the backing layer, said pad adherent to the skin of the patient and defining the shape of said electrode;

(b) said second layer including an electrically conductive backing layer, overlying and having substantially the same shape as said pad, said backing layer being composed of conductive silicone rubber based material, said backing layer defining a multiplicity of perforations therein at predetermined intervals, each perforation extending completely through said conductive backing layer, said backing layer further defining an integral, unperforated, raised portion in an upper surface thereof, said raised portion defining a slot therein for receipt of a connector for a stimulation unit, said pad and said backing layer being bonded to one another along a lower surface of said backing layer, said pad being open to the ambient atmosphere through said perforations in said conductive backing layer; said adhesive pad having a corresponding multiplicity of projections extending axially at least part way into said backing layer perforations and forming tight mechanical contact with at least part of the inner surface of said perforations to increase the mechanical and adhesion bonding between said backing layer and said adhesive pad so that said electrode may be removed from the skin of the patient easily without tearing said backing layer away from the adhesive pad.

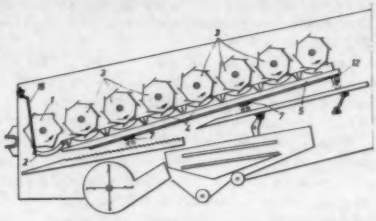
4,367,756

VIBRATION-FREE SELF-PROPELLING HARVESTER THRESHER

Heinrich Roderfeld, and August Kampwerth, both of Harsewinkel, Fed. Rep. of Germany, assignors to Claas OHG, Harsewinkel, Fed. Rep. of Germany

Filed Mar. 30, 1981, Ser. No. 249,178
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1980, 3013113
Int. Cl.³ A01F 12/44
U.S. Cl. 130—23 12 Claims

1. A vibration-free self-propelled harvester thresher, comprising threshing means including a threshing drum and a thresh basket associated with one another; separating means including a plurality of separating drums and a plurality of separating elements each located under a respective one of said separating drums, said separating drums and elements being arranged behind said threshing means and successively one behind the other, as considered in a transporting direction; and



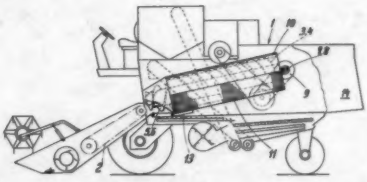
single means for simultaneously and jointly adjusting said separating elements substantially in horizontal and vertical directions.

4,367,757

HARVESTER-THRESHER COMBINE

Helmut Claas, Harsewinkel, Fed. Rep. of Germany, assignor to Claas OHG, Harsewinkel, Fed. Rep. of Germany

Filed Jun. 25, 1981, Ser. No. 277,215
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1980, 3023756; Sep. 1, 1980, 3032863
Int. Cl.³ A01F 12/20
U.S. Cl. 130—27 T 8 Claims



1. In a harvester-thresher combine including a support movable in a predetermined direction on an agricultural field from which cereal plants are to be harvested, and an arrangement for mowing the plants, a combination comprising at least two elongated threshing and separating drums mounted on the support for rotation about parallel axes extending along the predetermined direction such that said threshing and separating drums have respective leading and trailing ends as considered in the predetermined direction; means for rotating said threshing and separating drums about the respective axes thereof in the same sense of rotation; and a common housing mounted on the support and bounding a substantially oval chamber which accommodates both of said threshing and separating drums and has a common inlet opening at said leading, and a common discharge opening at said trailing, ends of said threshing and separating drums.

4,367,758

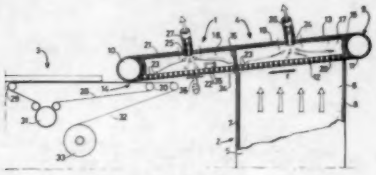
CIGARETTE MANUFACTURING MACHINE OF THE CONTINUOUS ROD TYPE

Enzo Seragnoli, Bologna, Italy, assignor to G.D Societa per Azioni, Italy

Filed Nov. 5, 1980, Ser. No. 204,343
Claims priority, application Italy, Nov. 16, 1979, 50840 A/79
Int. Cl.³ A24C 5/18, 5/31
U.S. Cl. 131—84 B 3 Claims

1. A cigarette manufacturing machine of the continuous rod type comprising a substantially vertical duct for feeding a continuous stream of tobacco particles from the bottom up-

wards, a conveyor system for forming and transferring a layer or filler of tobacco particles comprising an air-permeable conveyor belt in the form of an endless loop disposed to close the upper end or outlet of said duct and extending in the direction of its motion substantially in a straight-line path as far as a position, known as the discharge position, at which it meets the feed track of a cigarette paper web, first independent suction means arranged to retain said filler on said belt and applied to that face of said belt opposite the one holding said filler and



acting transversely to the direction of movement of said belt, said conveyor system being characterised in that said suction means are divided into first suction means operating over a first portion of said belt disposed at the outlet of said duct, and second suction means, independent of the first, operating over a second portion of said belt between said duct and said discharge position whereby the second independent suction means applies a suction force so as to compensate for the loss of force exerted by said rising air current which communicates with said first independent suction means.

4,367,759

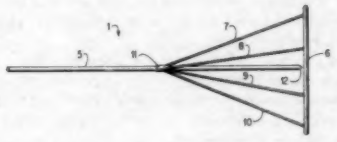
FLEXIBLE TEETH-CLEANING DEVICE

Larry H. Kline, 18 Broad St., Suite 805, Charleston, S.C. 29401

Filed Feb. 22, 1982, Ser. No. 351,271

Int. Cl.³ A61C *15/00*

U.S. Cl. 132—89 **8 Claims**



1. A device for use in cleaning teeth and adjacent areas comprising:

a. a shaft with a cleaning end;

b. a flexible rest, with an opening through which said shaft extends, operative to be placed against said teeth and adjacent areas to stabilize the position of said device and flexible rest comprising a plurality of flexible struts secured to said securing means and extending outward from said securing means at varying positions with respect to said shaft, forming said opening through which said shaft extends, and a guard face, which may be placed against said teeth and adjacent areas, and to which each of said flexible struts are secured; and

c. securing means secured to said shaft with a cleaning end, and to said flexible rest,

whereby when said flexible rest is placed against said teeth and adjacent areas and said shaft is pressed forward, said flexible area reduces in length allowing said cleaning end of said shaft to project through said flexible rest a distance dependent on the distance said shaft is pressed forward.

4,367,760

COIN DISPENSER MADE WITH ADJUSTABLE HEIGHT STRUCTURE

Kim Thomas, 51 Thirkleby Close, Slough (Berkshire), England, and Wilhelm A. Van Zeggeren, Van Goghlaan 18, Bleiswijk, Netherlands

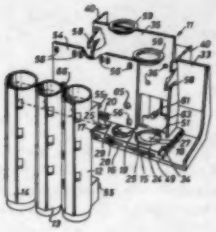
PCT No. PCT/US80/00202, § 371 Date Nov. 3, 1980, § 102(e) Date Nov. 3, 1980, PCT Pub. No. WO80/01852, PCT Pub. Date Sep. 4, 1980

PCT Filed Feb. 29, 1980, Ser. No. 212,715

Claims priority, application United Kingdom, Mar. 1, 1979, 7907251

Int. Cl.³ G07D *1/02*

U.S. Cl. 133—4 A **17 Claims**



1. A coin dispenser comprising:

(a) a substantially horizontally extending channel of shallow cross-section,

(b) an upright coin tube extending down through an opening in the upper wall of the channel,

(c) an aperture in the lower wall of the channel offset from the axis of the coin tube,

(d) an apertured slide plate mounted for reciprocating movement in the channel between a position in which the slide plate's aperture is below the coin tube and a position in which the slide plate's aperture is above the aperture in the lower wall,

(e) a mounting member fixed vertically with respect to the substantially horizontally extending channel,

(f) a plurality of deformed pegs carried by the coin tube, and

(g) vertically elongated slots in the mounting member for receiving the deformed pegs, the deformation of the pegs locking the lower end of the coin tube at a predetermined height above the lower wall of the channel, said predetermined height being slightly greater than the thickness of the denomination dispensed by the tube.

4,367,761

PORTABLE FABRIC SHELTER

Daniel Winant, 144 Rue de la Source, 92000 Nanterre, France

Filed Aug. 7, 1980, Ser. No. 175,961

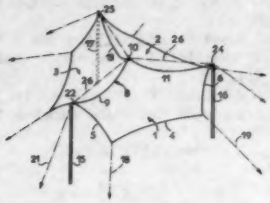
Claims priority, application France, Aug. 14, 1979, 79 20671

Int. Cl.³ E04B *1/347*

U.S. Cl. 135—87 **16 Claims**

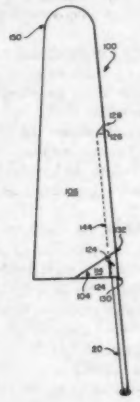
16. A fabric shelter which is capable of being taken down, such as a roof, tent, or the like, said shelter comprising a plurality of assembled fabric roof panels which panels have in their upper part a seam line between adjoining roof panels along a curvilinear upper edge of each roof panel, which curvilinear edge is concave and relates to an upwardly facing concave curvilinear seam line between adjoining roof panels, support posts adjacent outer ends of said edges and in supporting relation to the roof panels, and means for tensioning each of said roof panels, said means being fixed to a substantially rectilinear

edge of the corresponding roof panel opposed to the seam line at two points which are spaced apart a distance which is less



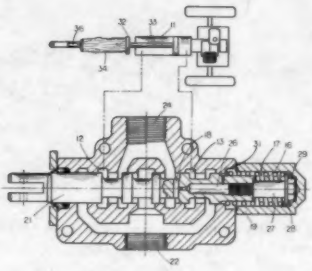
than a distance between said support posts in supporting relation to the corresponding panel.

4,367,762
UMBRELLA COVER AND METHOD OF MAKING
Emanuel Dubinsky, 99 Kingston Ave., Yonkers, N.Y. 10704
Continuation-in-part of Ser. No. 220,119, Dec. 24, 1980. This application Mar. 6, 1981, Ser. No. 241,020
Int. Cl.³ A45B *25/24*
U.S. Cl. 135—33 C **10 Claims**



1. An umbrella cover comprising a sleeve of substantially pliable material having a front and a rear opposed side, with said sleeve having an upper end and a lower end, said lower end being open for receiving the canopy of an umbrella into said sleeve, said front and rear side having first and second edges defining the edges of said sleeve, said front side having an upwardly extending aperture at said first edge thereof extending inwardly from said lower end to a point along said first edge substantially above said lower end so as to expose the interior of said opposed said rear side, said exposed interior forming a backing member for said aperture; a rod retaining pocket portion longitudinally extending along said first edge to said lower end; and a substantially rigid telescoping support rod member retainable within said pocket portion and partially extending along said sleeve first edge in the direction of said sleeve longitudinal axis; whereby said cover may be readily mounted upon said umbrella canopy with said support rod telescopically extended by cooperation between said support rod and said and exposed backing member coverage of said canopy completed by telescopic closure of said support rod.

4,367,763
FOUR-WAY DIRECTIONAL VALVE
Glen Brand, 4114 N. 79th, Omaha, Nebr. 68134
Filed Mar. 9, 1981, Ser. No. 242,094
Int. Cl.³ F15B *13/04*
U.S. Cl. 137—106 **2 Claims**



1. A four-way directional hydraulic spool valve having a valve body with a valve spool bore comprising:

a high pressure port into said valve body bore;

a return port into said valve body bore;

a first working port into said valve body bore;

a second working port into said valve body bore;

a spool valve slidably disposed within said valve body bore having a first working position, a central neutral position, and a second working position;

means on said valve spool for connecting said high pressure port with said first working port and said second working port with said return port when the spool is in said first working position;

means on said valve spool for connecting said high pressure port with said return port and locking fluid in the working ports when said spool is in the center neutral position;

means on said valve spool for connecting said high pressure port with said second working port and said first working port with said return port when the spool is in said second working position;

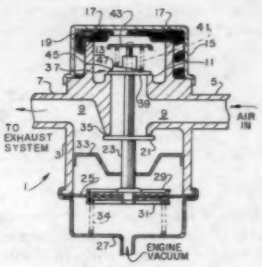
biasing means within said valve body bore for urging said valve spool into said first working position whereby force must be applied to the valve spool to move it from the first working position into either the neutral position or the second working position; and

fluid bypass means for automatically moving said spool valve from said first working position against the force of said biasing means, to said neutral position and fluidly holding said spool valve in said neutral position upon reaching a predetermined pressure in said high pressure port, said bypass means including pressure receiving means on a portion of said spool disposed within a chamber within said valve body for moving said spool, against the urging of the biasing means, from the first working position into said neutral position, and passageway means disposed within said spool valve and being in constant fluid communication with said high pressure port and said pressure receiving means when said spool valve is in same first working position thereof for transferring fluid pressure from said high pressure port to said pressure receiving means, whereby an operating restraint in the first working position of said spool valve will cause the spool valve to be moved to and held in the neutral position until the pressure in said high pressure port drops below said predetermined level or said spool valve is moved to said second working position thereof.

4,367,764
BY-PASS VALVE IMPROVEMENT

John B. Fitzgerald, St. Louis, Mo., and George L. York, Belleville, Ill., assignors to ACF Industries, Inc., New York, N.Y.

Filed Apr. 24, 1981, Ser. No. 257,464
Int. Cl.³ F16K *31/126*
U.S. Cl. 137—115 10 Claims

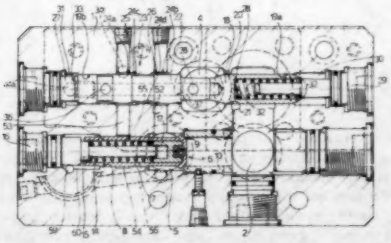


1. In an air by-pass valve having an air inlet, and air outlet, a relief port, and a relief valve responsive to excessive air pressure for opening the relief port and dumping air to atmosphere, the improvement wherein the relief valve comprises a valve member mounted on a stem and movable relative thereto, one side of the valve member being acted on by a spring biasing the valve member to close the relief port and air pressure acting on the opposite side of the valve member to move the valve member against the spring and open the relief port, the side of the valve member against which the spring acts being contoured so the spring force is unevenly applied to the valve member over the surface on which the spring acts, uneven application of this force causing the valve member to cock against the stem when the valve member is moved from its relief port closing position by excessive air pressure whereby air flow around the valve member is unbalanced thereby reducing relief valve hammer caused by harmonic vibrations induced by air flow around the relief valve member.

4,367,765
FLOW REGULATOR FOR HYDRAULIC CIRCUITS

Luciano Moretti, Turin, and Giulio Dotti, Milan, both of Italy, assignors to Centro Ricerche Fiat S.p.A., Strada Torino, Italy

Filed Dec. 31, 1980, Ser. No. 221,628
Claims priority, application Italy, Jan. 8, 1980, 67018 A/80
Int. Cl.³ F15B *13/02*
U.S. Cl. 137—881 10 Claims

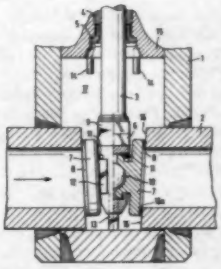


1. A flow regulator designed to control the flow of a pressurized fluid between a source of said fluid which feeds it at a feed pressure, and a user device in which said fluid is at a utilization pressure which depends on the operating conditions of the device, comprising: a body in which there is provided a feed chamber and a utilization chamber, a discharge valve arranged to open and to feed towards a discharge chamber at least part of said fluid from said source when the difference between said feed pressure and said utilization pressure exceeds a given value, a valve element mobile in the direction of its axis which is arranged to vary the degree of closure of an orifice between said feed chamber and said utilization chamber of said body and is kept normally by the action of a spring in a rest position in which it closes said orifice, a first and second cavity in which a first and a second active surface of said valve element are respectively housed, each active surface being arranged to sense a pressure acting on it and to determine a corresponding axial movement of said valve element, said first cavity being in communication with said utilization chamber by way of a first duct in order to cause said utilization pressure to act on said first active surface of the valve element and said second cavity being in communication with said feed chamber by way of a second duct, said first and second ducts being in communication with each other by way of a third duct, and an interception member disposed within said third duct and designed to vary the the flow of said fluid through said third duct, said feed chamber and said second duct being in communication with each other by way of a bore of predetermined size which is arranged to reduce the pressure of said fluid passing from said feed chamber to said second duct, such that the degree of closure of said orifice between said feed chamber and said utilization chamber is varied by adjusting said interception member which varies the flow of said fluid through said third duct and thus generates in said second duct a control pressure which is transmitted to said second cavity and to said second active surface and consequently moves said valve element.

4,367,766
SLIDE VALVE

Vilho Uomala, Pietarsaari, Finland, assignor to Oy Wartsila Ab, Helsinki, Finland

Filed Apr. 14, 1980, Ser. No. 140,243
Claims priority, application Finland, Apr. 18, 1979, 791247
Int. Cl.³ F16K *29/00*
U.S. Cl. 137—243 11 Claims



1. A slide valve or the like, comprising:
a slightly wedge-formed valve member arranged to close a flow duct in said valve by a cross-wise movement relative to said duct;
said valve having annular sealing surfaces surrounding said flow duct and being engageable by sealing side portions of said valve member for closing said valve;
said sealing side portions of the valve member being considerably narrower than said annular sealing surfaces surrounding said flow duct, and being in the closing position of said valve, located relative to said annular sealing surfaces at a relatively great distance from the inner edge of said annular sealing surfaces;
said sealing side portions of the valve member being located each to a separate unit journalled in a body portion of said valve member; and
flexible pins eccentrically located relative to said slide units

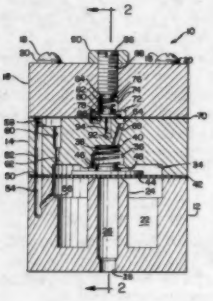
for causing rotation thereof when said slide units come into contact with said flexible pins at an extreme open position to achieve even wear on the sealing side portions of said valve member.

4,367,767

SERVO-CONTROLLED GAS PRESSURE RELIEF VALVE

Claude C. Hurd, Riverside, Calif., assignor to Bear Medical Systems, Inc., Riverside, Calif.

Filed Dec. 4, 1980, Ser. No. 212,889
Int. Cl.³ F16K *17/10*
U.S. Cl. 137—489 8 Claims



1. A gas pressure relief valve for maintaining the gas pressure in a pressurized gas system at a selected pressure, comprising:

a first body section having a first face;

a second body section having opposed second and third faces, said second face adjoining said first face and forming a first chamber therebetween;

means in said first body section for providing an inlet to said first chamber for receiving pressurized gas and an outlet for conducting said gas to said system;

an exhaust port in said first body section and communicating with said first chamber through a first valve seat, said first valve seat being approximately coplanar with the juncture between said first and second faces;

a third body section having a fourth face adjoining said third face and forming a second chamber therebetween;

a bleed vent in said second body section and communicating with said second chamber through a second valve seat, said second valve seat being approximately coplanar with the juncture between said third and fourth faces;

main valving means, in said first chamber, for opening said exhaust port in response to the opening of said bleed vent and including a first pressure-responsive diaphragm captured between said first and second faces and engageable with said first valve seat;

conduit means for communicating pressure between said first and second chambers; and

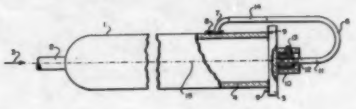
pilot valving means, in said second chamber, and responsive to the pressure in said first chamber, for opening said bleed vent when the pressure in said second chamber exceeds said selected pressure, said pilot valving means including a second pressure-responsive diaphragm captured between said third and fourth faces and biased to close against said second valve seat with said selected pressure.

4,367,768

REFRACTORY PROTECTIVE TUBE FOR THE HEAT TREATMENT OF SEMICONDUCTOR COMPONENTS

Karl A. Schülke, Neuberg, Fed. Rep. of Germany, assignor to Heraeus Quarzschmelze GmbH, Hanau, Fed. Rep. of Germany

Filed Feb. 19, 1980, Ser. No. 122,089
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1979, 2907371
Int. Cl.³ C23C *13/08*
U.S. Cl. 137—527.6 9 Claims



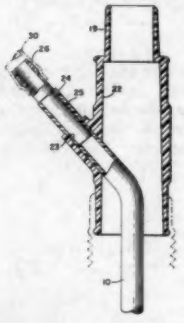
1. In a refractory protective tube for the heat treatment of semi-conductor components which is constricted at one end and at such constricted end is provided with a treating or working gas inlet, said tube having opposite to said gas inlet a gas outlet to be closed, the improvement for the prevention of back diffusion of ambient air wherein said gas outlet is normally closed by a cover, which cover is fastened to a holding bracket which is pivotally movably suspended from the tube, said holding bracket yieldably biasing said cover toward said closed position and allowing movement of said cover away from said gas outlet in response to a predetermined pressure being attained within the tube.

4,367,769

SAFETY CONNECTOR FOR FLEXIBLE TUBE DEVICE

James Bain, 1650 Gloucester Rd., London, Ontario, Canada (N6S 2S6)

Filed Jul. 17, 1978, Ser. No. 925,393
Int. Cl.³ F16L *11/12*
U.S. Cl. 138—114 2 Claims



1. A connector comprising a rigid tubular member, said rigid tubular member having in axial alignment a first tubular end portion and a second tubular end portion, said tubular member having a substantially centrally located portion, a first flexible tubing having an end portion concentrically frictionally positioned on said first end portion, said second end portion having a tube stub extending axially beyond said second end portion and of a diameter less than said second end portion, said centrally located portion having a tubular stub having a bore therethrough in communication internally with respect to said rigid tubular member and at an angle less than 90° with respect to the axis of said rigid tubular member in the direction towards said second end portion, said tubular stub having a second flexible tubing threaded therethrough into said rigid

tubular member and through said first flexible tubing, said second flexible tubing having an end portion extending beyond said tubular stub, said end portion of said second flexible tubing being fitted with a tubular connecting means, said tubular connecting means having a portion fitted internally of said second flexible tubing and having a diameter to distend the said end portion and a portion of the tubular connecting means extends into said tubular stub.

4,367,770

ROTATIONAL DOBBY

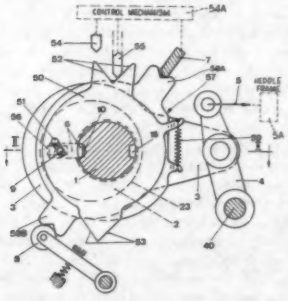
Rudolf Schwarz, Horgen-Zuerich, Switzerland, assignor to Staeubli Ltd., Horgen-Zuerich, Switzerland

Filed Aug. 11, 1980, Ser. No. 177,159

Claims priority, application Switzerland, Aug. 16, 1979, 7500/79

Int. Cl.³ D03C *1/00*

U.S. Cl. 139—66 R 12 Claims



1. In a rotational dobby for controlling at least one heddle frame in a weaving machine, including at least one eccentric disk which is rotatably supported on a drive shaft and has a coupling wedge supported thereon for movement into and out of selective engagement with two grooves provided on diametrically opposite sides of said shaft, a connecting rod supported on the outer circumference of said eccentric disk and means for operatively coupling said connecting rod to said heddle frame, a control mechanism having two movably supported pressure fingers, and a control member supported for movement relative to said eccentric disk and operatively coupled to said coupling wedge, the improvement comprising wherein said control member is a control disk which is supported for a limited amount of rotation on said drive shaft, said control disk having cam means slidingly engaging a bolt provided on said coupling wedge for effecting in response to rotation of said control member said movement of said coupling wedge into and out of engagement with said grooves in said shaft, and having two control stops which are diametrically opposed and are operatively engaged by said pressure fingers during movement thereof, each said control stop having two stop surfaces thereon inclined in opposite directions with respect to the direction of movement of said pressure fingers, whereby movement of a said pressure finger into engagement with one of said stop surfaces effects rotary movement of said control member.

4,367,771

CONNECTING PART FOR ELECTRICAL WARP STOP MOTION ON WEAVING MACHINES

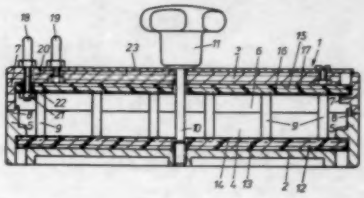
Hans Baumann, Horgen, Switzerland, assignor to Grob & Co. Aktiengesellschaft, Horgen, Switzerland

Filed Oct. 1, 1980, Ser. No. 192,858

Claims priority, application Switzerland, Oct. 2, 1979, 8856/79

Int. Cl.³ C03D *51/28*

U.S. Cl. 139—358 6 Claims



1. Connecting part for warp stop motion, for conducting electrical current to several contact bars positioned parallel to each other and each consisting of two insulated current rails, including a first and a second housing shell, each with two longitudinal side frames with supporting slots at equal distances to take up the contact bars, and two narrow lateral side frames, are pressed against each other by means of a securing device, and that on the interior bases of both housing shells a strip of elastic material, covered by a contact foil or band, is attached for the purpose of conducting electrical current to all the contact bars, whereby the complementary distance of the two contact foils is less than the length of the supporting slots for the contact bars extending between them, and that terminal contacts on the exterior side of one housing shell are electrically connected to one each of the two contact foils on the interior bases of both housing shells.

4,367,772

NOZZLE ASSEMBLY FOR A WEAVING MACHINE

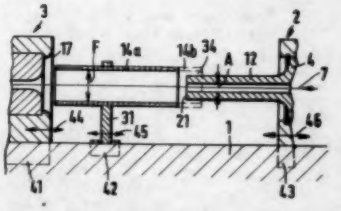
Erich Wall, Brutten, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jul. 14, 1980, Ser. No. 168,522

Claims priority, application European Pat. Off., Aug. 8, 1979, 79 102849.1

Int. Cl.³ D03D *47/28*

U.S. Cl. 139—435 14 Claims



1. A yarn insertion nozzle assembly for a weaving machine, said assembly comprising

at least one insertion nozzle having a passage for a yarn, a plurality of air admission channels merging with said passage into an outflow channel for passage of a yarn and a transporting stream therethrough and therefrom in a given flow direction; and

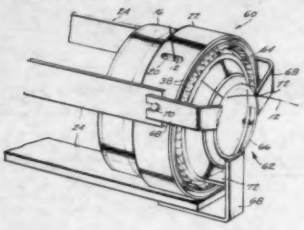
a guide channel following said outflow channel, said guide channel being a tube adjustably mounted for movement in said flow direction to guide a yarn therethrough.

4,367,773

GUIDE FOR WITHDRAWING YARN FROM A FILLING MEASURING AND SUPPLYING DEVICE FOR A LOOM

Kermit T. Newcomb, South Hill, Va., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Feb. 18, 1981, Ser. No. 236,282
Int. Cl.³ D03D 47/36
U.S. Cl. 139—452 2 Claims



1. In a loom having means for inserting predetermined lengths of filling yarn and means for measuring and supplying such yarn lengths to the inserting means including a rotatable circular yarn winder provided with a circular array of yarn-etching fingers along a peripheral edge thereof, the combination of a guide for yarn lengths withdrawn endwise from one end of the winder to direct the withdrawn yarn to the inserting means, comprising:

a first ring having an inner diameter slightly smaller than the outer diameter of the winder fixedly mounted concentrically therewith adjacent to but spaced from the fingers; and

a second ring having an inner diameter less than that of said first ring fixedly mounted concentrically with said first ring in spaced relation with that side thereof opposite the winder;

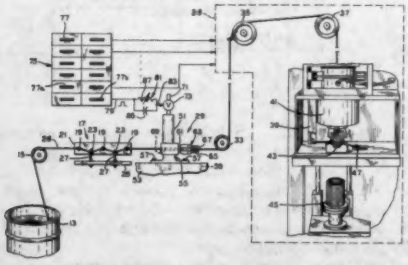
said first ring cooperating with said fingers for enabling catching of yarn thereby for winding it on the winder and said second ring preventing undue ballooning of the yarn as it is withdrawn from the end of the winder and supplied to the inserting means.

4,367,774

METHOD AND APPARATUS FOR STRIPPING INSULATION OFF WIRE IN COIL WINDING MACHINES

Richard B. Arnold, and Leo M. Schlaudroff, both of Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.

Filed Aug. 5, 1980, Ser. No. 175,441
Int. Cl.³ H01F 41/05; H02K 15/04
U.S. Cl. 140—1 20 Claims



1. A method of stripping insulation from a continuous length of wire during a generally continous coil winding process involving a rotating flyer generating turns of wire about a coil form comprising: continuously moving insulated wire along a wire feed path from a wire supply, past a tensioning means, and developing a plurality of coils of wire in a coil winding machine by winding a continuous length of the wire drawn along the path around a coil form with the rotating flyer, counting the number of revolutions of the flyer, and providing a wire stripper device having a plurality of rotatable blades arranged in a circular array about the wire feed path between the wire supply and the winding machine; relatively moving the wire and stripper device while the wire is under tension and thereby causing the wire to be located along a straight path along the center of the circular array of blades; preselectively actuating the stripper device in response to the flyer having rotated a predetermined number of revolutions, rotating the blades, and moving the blades radially inwardly toward the wire so that the blades rotate about, engage, and strip the insulation off a segment of the wire as it and the stripper device undergo relative movement and before such segment reaches the coil form; winding wire around the coil form after the segment has been stripped, and until the segment of wire which has been stripped is located in a wire cutter; and then actuating the wire cutter to sever the wire at a point within the stripped segment.

16. Apparatus for developing coils for electric motors comprised of insulated wire and for stripping the insulation off a segment of the wire comprising:

a supply of insulated wire,

winding means for drawing wire from the supply and winding the wire around of coil form, said winding means comprising a flyer rotatable about the form,

a wire stripper device positioned between the wire supply and the winding means such that the wire passes through the stripper device as it is drawn by the winding means, said stripper device being actuatable for selectively stripping the insulation off a segment of the wire,

said winding means including a wire cutter positioned to selectively engage and cut the wire, and

control means for actuating the stripper to strip a segment of wire after the flyer has rotated a first predetermined number of revolutions about the coil form, and for stopping the winding of the wire after a second predetermined number of revolutions, greater than the first predetermined number of revolutions, and wherein the first and second predetermined numbers are selectively determinable.

4,367,775

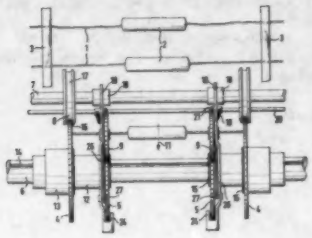
APPARATUS FOR CUTTING TO SIZE AND BENDING LEADS OF ELECTRICAL COMPONENTS

Thomas Weresch, Greschbachstr. 19, D-7500 Karlsruhe 41, Fed. Rep. of Germany

Filed Nov. 6, 1980, Ser. No. 204,517
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1979, 2944666
Int. Cl.³ B21F 45/00
U.S. Cl. 140—105 13 Claims

1. In an apparatus for cutting to size and bending leads of electrical component, the apparatus comprising: transport toothed wheel means for taking up leads between teeth thereof, bending toothed wheel means, all of said wheel means being keyed on a main driving shaft means supported by bearings in a supporting structure; cutting tool means for use with the transport toothed wheel means; bending tool means for use with the bending toothed wheel means, gripping toothed wheel means elastically acted upon for meshing with said bending toothed wheel means; and a further shaft means, parallel to said main driving shaft means, for supporting said gripping toothed wheel means, wherein the improvement comprises a plurality of arm means, each of said plurality of arm means is rotatably supported by said further shaft means, said arm means being equal in number to a number of bendinhg toothed wheel means and constructed for use therewith, and a

spring means for urging each of said arm means in a direction of said main shaft means, and wherein said gripping toothed



wheel means and said bending tool means are supported on said arm means.

4,367,776

MACHINE FOR THE MANUFACTURE OF REINFORCING BODIES FOR PRECAST CONCRETE PARTS

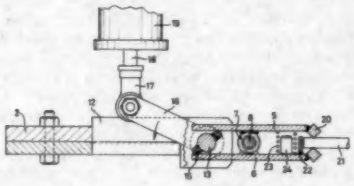
Georg Pfender, Kisslegg, Fed. Rep. of Germany, assignor to MBK Maschinenbau GmbH, Kisslegg, Fed. Rep. of Germany

Filed Oct. 23, 1980, Ser. No. 199,736

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1979, 2945556

Int. Cl.³ B21F *27/10*

U.S. Cl. 140—112 **3 Claims**



1. A machine for the manufacture of reinforcing bodies for precast concrete parts, including pipes, having longitudinal bars and wires wound over and welded at the points of intersection of the bars, comprising:

a base frame;

a main disc mounted fixedly on the base frame;

guide pieces for the longitudinal bars radially displaceable relative to and carried by the main disc;

a carriage displaceable relative to the axis of the main disc;

a support disc mounted on the carriage and coaxially relative to the main disc; and

elongate clamping members carried by the support disc which constitute radially extending clamping slits, the length and position thereof corresponding to the range of adjustment of the guide pieces on the main disc, for clamping the ends of the longitudinal bars at a selectively different spacing from the axis of the support disc.

4,367,777

VIOLIN, KIT AND METHOD OF MAKING SAME

Charles P. Baker, 6905 Moyer Pl., McLean, Va. 22101

Division of Ser. No. 85,203, Oct. 16, 1979, Pat. No. 4,304,164. This application Jun. 30, 1981, Ser. No. 279,152

Int. Cl.³ G10D *1/02*; B27D *1/00*

U.S. Cl. 144—346 **2 Claims**

1. A method of making a violin comprising the steps of forming a violin body, neck, backplate and sound post as an integral, unitary structure,

the body having walls and an opening in the end thereof opposite the neck end, and

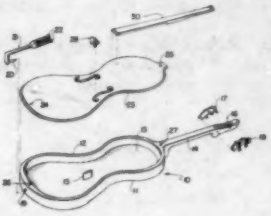
the neck having side and front openings therein near the distal end thereof to receive tuning pegs and strings, respectively;

forming a top plate and bass bar as a separate assembly;

adhering the top plate to the walls of the body;

separately forming a unitary fingerboard, nut and shim structure;

adhering the fingerboard and shim structure to the neck;



providing a bridge;

adhering the bridge to the top plate;

providing a tailpiece having a generally U-shaped hook at one end dimensioned to be received in the opening at the end of the body and four hook elements at the other end;

attaching tuning pegs to the openings provided therefor in the neck; and

connecting violin strings between the tailpiece hook elements and the tuning pegs.

4,367,778

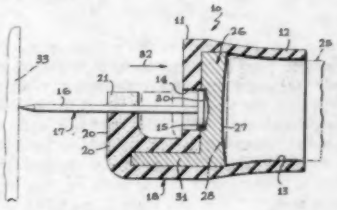
NAIL DRIVER ACCESSOR HAVING A NAIL HOLDER MECHANISM

Ray Bradbury, 500 E. Fairmount Rd., Burbank, Calif. 91501

Filed Oct. 28, 1980, Ser. No. 201,429

Int. Cl.³ B25C *1/02*

U.S. Cl. 145—30 R **3 Claims**



1. A nail driver accessory for releasably holding a nail having a shank and a head so that it may be driven into a workpiece by a hammer, the combination comprising:

a substantially L-shaped body in side elevational of soft, pliable material having a receptacle provided at one end and an opening coaxial therewith provided at its opposite end;

a projection integral with the opposite end of soft, pliable material outwardly extending from said body terminating in a yoke in spaced relationship to said body opening provided with a slot lying on the longitudinal central axis of said body opening and said receptacle;

a metal plate carried in said body jointly serving as the bottom of said receptacle and said opening so as to separate them therebetween and having a projection portion extending within and surrounded by said outwardly extending projection;

said receptacle is adapted to form fit and insertably receive and releasably engage with the conventional impact head of the hammer so that it bears against one side of said metal plate;

said body opening is adapted to insertably receive the head of a nail while the shank lies in said yoke slot so that the head of the nail bears against the other side of said metal plate from its side bearing against the impact head of the hammer;

said metal plate includes an inner surface serving as the bottom for said receptacle which is concave so as to substantially conform with the contour of the hammer impact head;

said metal plate includes an outer surface engagable with said body and having a recess therein coaxial with respect to said body opening substantially occupied by the head of the nail.

4,367,779

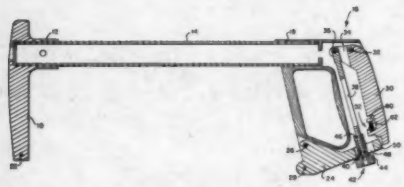
HACKSAW WITH IMPROVED BLADE TENSIONING MECHANISM

John F. Ewig, Worcester, Mass., assignor to Parker Manufacturing Company, Worcester, Mass.

Filed Mar. 23, 1981, Ser. No. 246,273

Int. Cl.³ B23D *49/12, 51/10*; B27B *21/06*

U.S. Cl. 145—33 A **11 Claims**



1. In a hacksaw of the type having a front generally vertical frame member, a top horizontal frame bar attached at its forward end to the upper end of the front frame member, a handle attached at its upper end to the rear end of the top horizontal frame bar, a rocker arm pivoted to the lower portion of the handle, and a blade held at its forward end by a front mounting post at the lower end of the front frame member, the blade being held at its rear end by a rear mounting post located on the rocker arm near one end thereof, improved means for adjustably applying tension to the blade, said improved tensioning means comprising:

(a) a manually movable lever pivoted adjacent its upper end to the handle, said lever having a rod mounting portion extending forwardly of the lever pivot point;

(b) a tension rod pivoted at its upper end to said rod mounting portion and hanging downwardly, said movable lever and tension rod pivot points being located with relation to each other such that pivoting said lever clockwise causes said tension rod to be lifted, and pivoting said lever counter-clockwise causes said tension rod to be lowered;

(c) a tension adjusting knob means cooperating with the lower end of said tension rod and the other end of the rocker arm for altering the distance between the other end of the rocker arm and the tension rod pivot point; and

(d) latch means for locking said lever to the handle;

(e) said lever pivoting in the clockwise direction to increase blade tension, and pivoting in the counter-clockwise direction to decrease blade tension.

4,367,780

CLOSURE MEMBER FOR VEHICLES

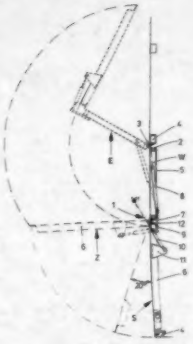
Wilhelm Walcher, Ulm/Donau, Fed. Rep. of Germany, assignor to Karl Kässbohrer Fahrzeugwerke GmbH, Ulm, Fed. Rep. of Germany

Filed Sep. 4, 1980, Ser. No. 183,895

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1979, 2936049

Int. Cl.³ E05D *15/00*

U.S. Cl. 160—213 **10 Claims**



1. In a closure member for a compartment opening in a vehicle body, having a swivel axis which is arranged at the closure member's upper edge and is substantially horizontal and having at least one first pressure spring which is hinged between the vehicle body and the closure member for opening and keeping open the closure member in an upwardly swung end position which exposes the compartment opening, the improvement comprising wherein the closure member is horizontally divided and, viewed in a closed position, has upper and lower closure member parts which are connected through a substantially horizontal connecting axis, the first pressure spring being hinged between the upper closure member part and the vehicle body, and including at least one second pressure spring arranged between the two closure member parts, which second pressure spring is used during opening of the lower closure member part, the upper closure member part being initially held by a lock, for swinging up the lower closure member part about the connecting axis into an intermediate position defined by a stop between the two closure member parts, upon the reaching of which intermediate position the upper closure member part is released from the lock and can also be swung out, so that then the first pressure spring swings both the closure member parts about the swivel axis into the end position.

4,367,781

INTERLEAVED FLEXIBLE WEATHER DOOR AND METHOD OF MANUFACTURE

Theodore E. Vallieres, Jr., 301 Porter St., Manchester, N.H. 03103, and Nicholas F. Dinicola, Wire Rd., P.O. Box 393, Merrimack, N.H. 03054

Filed Sep. 24, 1980, Ser. No. 190,190

Int. Cl.³ A47H *23/05*

U.S. Cl. 160—332 **9 Claims**

1. A flexible weather barrier for doorways comprising: a barrier section having

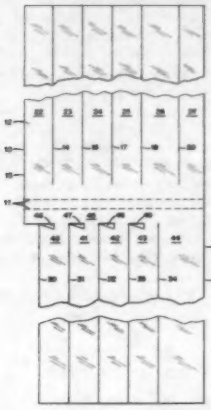
(a) A flexible sheet of plastic folded in the middle, halfway of its length dimension, to form a double layer;

(b) a first plurality of slits in a first layer of said double layer extending from a first end edge inwardly to a first transverse region near said middle dividing said first layer into a first series of strips;

(c) a second plurality of slits in a second layer of said double

layer extending from a second end edge inwardly to a second transverse region near said middle and opposite to said first transverse region to form a second series of strips, said second plurality of slits offset from said first plurality of slits whereby said slits do not fall on each other; and,

(d) a plurality of apertures in said first layer, each aperture



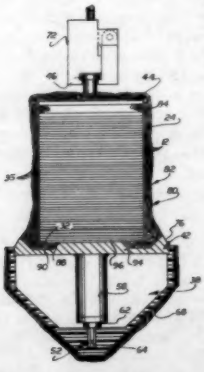
extending transversely from a respective one of said first plurality of slits at the end nearest said middle partially across the respective one of said first series of strips, said second series of strips passing partially through said apertures whereby said first series of strips and said second series of strips are interleaved with at least some of said strips being partly on one side and partly on the other side of said double layer.

4,367,782

METHOD AND APPARATUS FOR USE IN MOLDING ARTICLES

Gustav E. Schrader, Pepper Pike, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Jun. 1, 1976, Ser. No. 691,217
Int. Cl.³ B22D *17/22*
U.S. Cl. 164—137 **28 Claims**



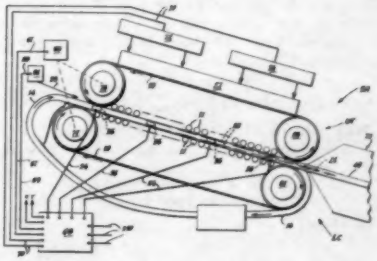
1. A method comprising the steps of providing a plurality of mold sections which at least partially define at least one mold cavity, applying a wet coating of liquid ceramic material over the mold sections, retaining the mold sections against movement relative to each other during said step of applying a wet coating of ceramic material over the mold sections by clamping the mold sections between a pair of rigid members, forming a rigid casing at least partially enclosing the mold sections by drying the wet coating of ceramic material, moving at least one of the rigid members away from a clamping position engaging at least one of the mold sections to a disengaged position spaced apart from the mold sections after performing said step of drying the wet coating of ceramic material, sealingly engaging a surface of the rigid casing of ceramic material which was exposed by said step of moving the one rigid member with a molten metal dispensing assembly, flowing molten metal from the molten metal dispensing assembly into a mold cavity which is at least partially defined by the mold sections, and holding the mold sections against movement relative to each other with the rigid casing of ceramic material during said step of flowing molten metal into the mold cavity, said step of flowing molten metal into the mold cavity including the step of flowing the molten metal from the molten metal dispensing assembly along a path extending through the ceramic casing surface exposed by moving the one rigid member.

4,367,783

METHOD AND APPARATUS FOR CONTINUOUS CASTING OF METAL UNDER CONTROLLED LOAD CONDITIONS

John F. B. Wood, Burlington; Stanley W. Platek, Essex Junction; Joseph C. O'Kane, and Gary P. Ackel, both of Burlington, all of Vt., assignors to Hazelett Strip-Casting Corporation, Winooski, Vt.

Filed Oct. 27, 1980, Ser. No. 201,006
Int. Cl.³ B22D *11/06, 11/16*
U.S. Cl. 164—452 **25 Claims**



1. In the method of continuously casting metal product directly from molten metal in which the molten metal is confined and solidified in a casting region vertically defined by parallel areas of upper and lower cooled, endless, flexible travelling casting belts supported in respective upper and lower belt carriages and laterally defined by first and second cooled endless, flexible travelling side dams, the invention which comprises:

establishing a plurality of monitoring locations along the confines of said casting region;

measuring, at each of said monitoring locations, the force serving to confine the solidifying metal within said casting region by sensing the force exerted by said metal through either carriage by measuring the relative displacements, occurring between the upper and lower carriages; and

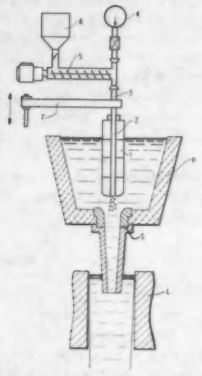
utilizing the resulting information for improving the casting operation.

4,367,784

METHOD FOR ADDING COOLING POWDERS TO STEEL DURING CONTINUOUS CASTING

Alberto Praitoni, and Antonio Spaccarotella, both of Rome, Italy, assignors to Centro Sperimentale Metallurgico S.p.A., Rome, Italy

Filed Apr. 12, 1978, Ser. No. 895,851
Claims priority, application Italy, Apr. 18, 1977, 49007 A/77
Int. Cl.³ B22D 11/10
U.S. Cl. 164—473 1 Claim



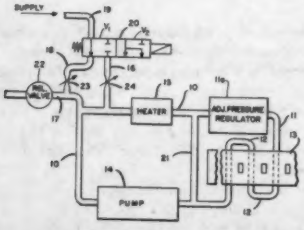
1. A method of adding steel powder to steel during the continuous casting of steel, comprising positioning a receptacle above a continuous casting mold with an outlet of the receptacle continuously feeding molten steel to the mold, maintaining a quantity of molten steel in the receptacle above the outlet from the receptacle to the mold, injecting into said molten steel in the receptacle beneath the surface thereof and adjacent said outlet, a continuous stream of inert gas containing steel powder in the amount of 0.5 to 3% by weight of the steel being cast and having a grain size of from 0.02 mm. to 3.0 mm, and immersing said outlet of the receptacle into the molten steel in the continuous casting mold, to a substantial depth below the surface of said molten steel in said mold.

4,367,785

LIQUID CIRCULATION METHOD AND APPARATUS

Paul E. Allen, Newtown, Conn., assignor to Logic Devices, Inc., Bethel, Conn.

Filed Feb. 9, 1981, Ser. No. 232,467
Int. Cl.³ F28F 27/00
U.S. Cl. 165—2 27 Claims



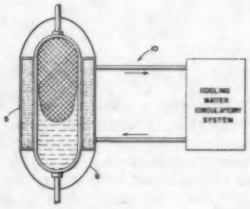
20. A method for controlling the pressure of a liquid circulated by a pump means within a liquid circulation conduit which is adapted to receive additional pressurized supply liquid, as required, from a pressurized main supply liquid source and is adapted to discharge said circulated liquid to a drain line having a drain pressure equal to the pressure desired within the circulation conduit, which comprises maintaining said liquid circulation system filled with liquid and open to said drain conduit at all times, opening said pressurized supply liquid source to said liquid circulation system to supply additional liquid, as required, to said circulation conduit, the pressure of the liquid which is permitted to circulate through said circulation conduit being reduced by the discharge of liquid from said circulation conduit out said drain line, and closing said pressurized supply liquid source to said circulation conduit while maintaining said circulation conduit open to said drain line in order to maintain an equilibrium between the pressure of the liquid within said circulation conduit and the pressure of the liquid in said drain line.

4,367,786

HYDROSTATIC BLADDER-TYPE STORAGE MEANS

Günther Häfner, and Hans-Josef Haepp, both of Stuttgart, Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Nov. 24, 1980, Ser. No. 209,417
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1979, 2947258
Int. Cl.³ F28D 17/02; F28F 23/00
U.S. Cl. 165—10 12 Claims



9. A hydrostatic bladder-type storage means for storing mechanical energy, the storage means comprising a pressure bottle means, an elastically resilient bladder means disposed in an interior of the pressure bottle means for accommodating a compressible medium, means provided on a first side of the pressure bottle means for enabling an introduction of the compressible medium into the bladder means, and means provided on a second end of the pressure bottle means for enabling a hydraulic fluid to be forced into and removed from the space in the pressure bottle means located between an interior wall of the pressure bottle means and the bladder means, characterized in that a porous elastic body of a foam synthetic resinous material is disposed in the bladder means and intimately joined thereto, the compressible medium fills the pores in the porous elastic body, the material in the porous elastic body has a specific thermal capacity which is higher than a thermal capacity of the compressible medium, and in that means are provided for maintaining the pressure bottle means at a predetermined temperature level.

4,367,787

AIR CONDITIONING APPARATUS AND METHOD FOR PAINT SPRAY BOOTHS

Norman F. Bradshaw, Richmond, England, assignor to Haden Schweitzer Corporation, Madison Heights, Mich.

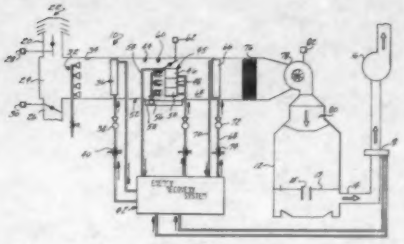
Filed May 16, 1980, Ser. No. 150,537
Int. Cl.³ G05D 23/00
U.S. Cl. 165—35 11 Claims

6. Air conditioning apparatus comprising:
a duct receiving a common mass of air flow therethrough;
heat exchanger means disposed in said ducting means receiving a portion of said flow through said ducting means;
means for causing a heat transfer media to be circulated

through said heat exchanger means to cause said air flow to be varied in temperature after passing therethrough;

bypass ducting means receiving a portion of said air flow not passing through said heat exchanger means;

jet nozzle means disposed downstream of said heat exchanger means;



distribution ducting means receiving said bypass air flow causing said air flow to pass into said jet nozzle means, said jet nozzle means being disposed to direct said bypass air flow into said air flow after passing through said heat exchanger means;

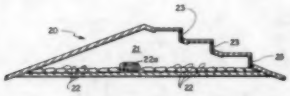
whereby thorough mixing of said bypass flow and said air flow passing through said heat exchanger means is produced.

4,367,788

METHOD AND APPARATUS FOR STORING ENERGY

William A. Cordon, 1090 N. 1800 East, Logan, Utah 84321

Filed Sep. 8, 1980, Ser. No. 185,353
Int. Cl.³ F24D *11/00*
U.S. Cl. 165—53 **4 Claims**



1. A method of insulating structures comprising the steps of forming an insulating material by substantially filling the voids of a porous carrier material particles with a phase-change compound while maintaining said particles in a surface dry condition; and

positioning the insulating material adjacent to at least one surrounding wall of the structure.

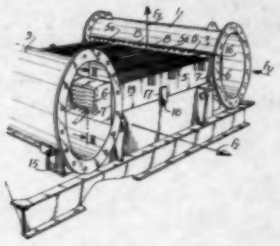
4,367,789

INDUSTRIAL COOLING EXCHANGER USED FOR COOLING AIR OR OTHER GASES

Jean-Pierre Moranne, Franconville, France, assignor to Societe Anonyme des Usines Chausson, Asnieres, France

Filed Nov. 16, 1979, Ser. No. 94,881
Claims priority, application France, Nov. 20, 1978, 78 32646
Int. Cl.³ F28F *7/00*
U.S. Cl. 165—76 **9 Claims**

1. An industrial cooling exchanger for cooling air or other gases comprising an inlet collector and a return outlet collector spaced from each other, support means, means for floatingly mounting said inlet and outlet collectors on said support means, a plurality of heat exchanger elements interconnecting said inlet and outlet collectors and aligned with each other, means including insertable parts for dismountably assembling each of said heat exchangers onto said inlet and outlet collectors, said insertable parts comprising at least one deformable gasket interposed between said inlet and outlet collectors and each end of said heat exchanger elements, each of said inlet and outlet collectors comprising a plurality of openable cradles aligned with each other on each collector and of substantially U-shaped form, said plurality of cradles including one cradle for each end of each of said heat exchanger elements, means to mount all of said cradles on the outsides of said inlet and outlet collectors, each of said cradles having an upper portion and a groove for receiving the deformable gasket to be engaged therein; each of the heat exchanger elements comprising, at each of the two ends thereof, a heat exchanger tube end plate engaging said deformable gasket in sealed relationship there-



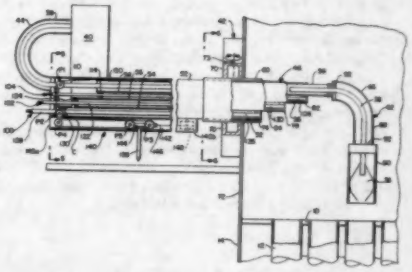
with, and a plurality of grooved covers one for each of said cradles for engaging said deformable gasket in sealed relationship therewith for selectively closing said upper portion of said cradle to thereby mount said heat exchanger element in operative relation to said collectors; whereby each of said heat exchanger elements can be removed from said cradles on said inlet and outlet collectors without disturbing said collectors on said support means after removal of said grooved covers from the two cradles at the inlet and outlet collector ends of an individual heat exchanger element.

4,367,790

MULTIPLE TUBE CLEANING APPARATUS

Walter A. Draeger, 1539 Haydenview Dr., Coeur d'Alene, Id. 83814

Filed Dec. 16, 1980, Ser. No. 217,090
Int. Cl.³ F28G *15/02, 15/04, 15/08*
U.S. Cl. 165—95 **19 Claims**



8. An apparatus for cleaning a plurality of vertically extending tubes which are fixedly located adjacent one another and opened at their top ends, said apparatus comprising:

a tube cleaning arrangement including a mechanical cleaning head and means for moving said head vertically between a raised position and a lowered position; and

a cleaning head support arrangement including means for moving said cleaning head horizontally to locations above said tubes when said head is in its raised position, whereby to clean any given tube by first moving said cleaning head

to a point directly above said given tube and thereafter lowering said head into and through the latter, said support arrangement also including means positioned horizontally to one side of said tubes for indicating the horizontal location of said cleaning head relative to said tubes, whereby said indicating means serves as a guide in locating said cleaning head above any of said tubes.

4,367,791
HEAT TRANSFER TUBING FOR NATURAL GAS EVAPORATOR

Takayoshi Asami, Otsu, Japan, assignor to Kobe Steel, Ltd., Kobe, Japan

Division of Ser. No. 7,324, Jan. 29, 1979, Pat. No. 4,296,539. This application Oct. 22, 1980, Ser. No. 199,529
Claims priority, application Japan, Jan. 27, 1978, 53-8601
Int. Cl.³ F28F *13/12, 1/42;* **F28D** *3/02*
U.S. Cl. 165—109 T **39 Claims**

1. A heat transfer tube assembly including extrudates of aluminum for a water spray-panel type evaporator for the gasification of liquified natural gases comprising:

a plurality of heat transfer tubes each comprising a tubular body, an opposite pair of planar members each projecting outwardly from the peripheral surface of said tubular body and radially with respect to the longitudinal axis of said tubular body and extending longitudinally along said axis, said planar members and said tubular body being provided with a plurality of external fins extending in parallel with said longitudinal axis, and a helical fin element including extrudates of aluminum and having a helical lead L and an outer diameter D, said helical fin element disposed within said tubular body and including at least three fin members each having a thickness in the range of 1.0 to 1.5 millimeters and each projecting radially outwardly with respect to said longitudinal axis to provide a helical formation extending along and about said longitudinal axis such that each said helical fin element comprises a ratio of L/D in the range of 9 to 10, the helix of said helical formation contacting the internal surface of said tubular body in a pressure-fitting relationship; and

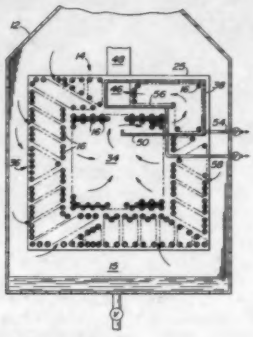
said plurality of heat transfer tubes being interconnected in a row with said planar members lying in a common plane and adjoining planar members being secured to each other in a parallel and juxtaposed relationship.

4,367,792
SURFACE CONDENSER

Leslie L. Forster, Easton, Pa., and Edward F. Hay, deceased, late of Belvidere, N.J. (by Constance Hay, executrix), assignors to Ecolaire, Incorporated, Malvern, Pa.

Filed Aug. 18, 1980, Ser. No. 179,410
Int. Cl.³ F28B *9/08*
U.S. Cl. 165—113 **10 Claims**

1. A steam condenser comprising a tube bundle mounted within a shell which is horizontally disposed, said shell having a steam inlet and a condensate outlet from a hot well, the improvement comprising at least one tube bundle within the shell and having an inner zone of tubes surrounded by an outer zone of tubes, means for introducing cold water through the outer zone of tubes and warmer water through the inner zone tubes so that most of the steam is condensed by the outer zone tubes with steam flow being radially inwardly toward the inner zone tubes and upwardly therefrom into a cooling section, the

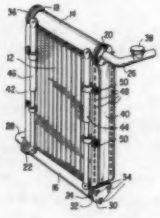


cooling section being in the outer zone and extending along the length of the tube bundle at the upper end thereof, said cooling section including a conduit having multiple inlets at spaced locations therealong for receiving cooled non-condensable gases and associated steam.

4,367,793
UNIVERSAL RADIATOR ASSEMBLY

John J. MacIntosh, 10269 Choiceana Rd., Hesperia, Calif. 92345

Filed Mar. 18, 1977, Ser. No. 778,877
Int. Cl.³ F28D *1/04*
U.S. Cl. 165—151 **2 Claims**



1. A universal radiator assembly for use as a replacement for automobiles having either upright or cross-flow type radiators, comprising:

a radiator core;

first and second tanks connected respectively to opposite ends of said radiator core in fluid sealing contact with said radiator;

selected separate inlet and outlet fittings having a configuration to match the radiator being replaced, said fittings including quick-attachment securing means;

mounting means located at each end of each of said tanks, including matching quick-attachment means for securing said selected inlet and outlet fittings in the desired orientation, to substantially correspond to the configuration of the radiator connections of the automobile radiator being replaced;

said mounting means including means for attaching and for releasing and permitting removal of said inlet and outlet fittings at room temperature, and reorienting of said inlet and outlet fittings or the substitution of new inlet and

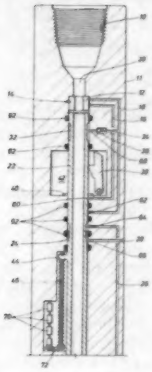
outlet fittings and the securing of said reoriented or new fittings to the ends of the tanks at from temperature; universal mounting means for mechanically securing said radiator into automobiles having many different radiator supporting arrangements, said universal mounting means including telescoping mounting brackets, and means for securing the parts of said telescoping brackets against relative movement with respect to each other.

4,367,794

ACOUSTICALLY ACTUATED DOWNHOLE BLOWOUT PREVENTER

John M. Bednar, Houston, and Clifford W. Petersen, Missouri City, both of Tex., assignors to Exxon Production Research Co., Houston, Tex.

Filed Dec. 24, 1980, Ser. No. 219,631
Int. Cl.³ E21B *33/127, 34/06, 34/16*
U.S. Cl. 166—65 R **72 Claims**



1. A device suitable for use as a downhole BOP in a well comprising:

a housing having an inner bore, an exterior wall, an inflatable packer which extends beyond the exterior wall when inflated, at least one first passageway extending between the inner bore and the exterior wall, at least one second passageway extending between two openings on the inner bore, at least one inflation passageway extending between an opening on the inner bore and the packer,

a control valve assembly having a sleeve-shaped valve body slidably mounted in the inner bore of the housing and adapted to provide, in a first position, open fluid communication between the inflation passageway and the exterior wall of the housing through said first passageway whereby the packer is deflated, and, in a second position, open fluid communication between the inflation passageway and the inner bore through said second passageway whereby the packer can be inflated,

a flapper valve adapted to substantially close the inner bore of the housing when the sleeve-shaped valve body is in its second position.

4,367,795

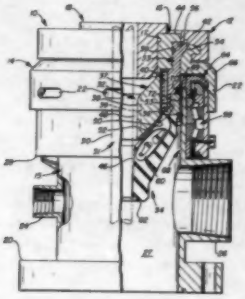
ROTATING BLOWOUT PREVENTOR WITH IMPROVED SEAL ASSEMBLY

Morris S. Biffle, Rte. 3, Box 445-D, Midland, Tex. 79701

Filed Oct. 31, 1980, Ser. No. 202,688
Int. Cl.³ E21B *33/03*
U.S. Cl. 166—84 **14 Claims**

1. A rotating blowout preventor having a main body, a longitudinal extending axial passageway formed therethrough through which a driving member can be received; said main body includes a lateral outlet in communication with the lower end of said axial passageway; means for removably mounting said main body to the upper end of a cased borehole; a rotating head assembly received within said axial passageway which forms the upper marginal end of said rotating blowout preventor;

a stripper assembly which includes a stripper rubber for sealingly receiving a longitudinally extending driving member in axial slidable relationship therewith; a stripper mount body to which said stripper rubber is affixed, an outer marginal length of said stripper assembly being of a configuration to be supportedly received in a removable manner within said rotating head assembly; seal means located between said stripper mount body and said axial passageway for precluding flow of drilling fluid therebetween;



an insert axially received within said stripper mount body, said insert includes a lower wedge face which is of conical configuration and which downwardly and inwardly slopes towards the axial passageway; said stripper rubber includes an upper conical face made complementary respective to said wedge face; said conical face of said stripper rubber abuttingly engages said wedge face;

an axial passageway formed through said stripper assembly which is concentrically arranged respective to the first said axial passageway;

and means associated with said stripper assembly for enabling a driving member to impart rotational motion thereinto which causes said rotating head and stripper assembly to rotate.

4,367,796

BLOWOUT PREVENTER AND GUIDELINE HANDLING

Vance E. Bolding, Irvine, Calif., assignor to Global Marine, Inc., Los Angeles, Calif.

Filed Nov. 21, 1980, Ser. No. 208,868
Int. Cl.³ E21B *19/02, 41/00*
U.S. Cl. 166—341 **13 Claims**

1. Apparatus for handling a flexible guideline extending from a selected location in a structure on or above the surface of an ocean or the like to a submerged location, the apparatus comprising:

a guideline frame mounted for lateral movement in the structure and from which the guideline extends to the submerged location;

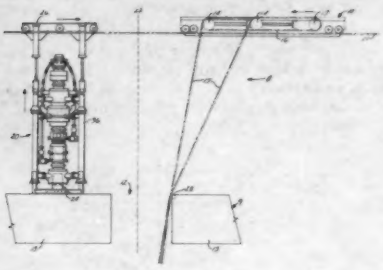
means for moving the frame laterally in the structure between a first position and a second position, the frame at the first position being disposed at said selected location in the structure, the frame at the second position being displaced laterally from its first position; and

tension means connected to the guideline for controlling tension in the guideline between the frame and the submerged location

12. A method for handling flexible guidelines connecting a structure located on or near the surface of an ocean to a sub-

merged location in the course of moving an object between the structure and the submerged location along a substantially vertical path of movement during which movement of the object is guided by the guidelines, the method comprising the steps of:

extending the flexible guidelines to the submerged location



from a movable frame disposed in the structure away from the path;

positioning the object along the path;

moving the frame sufficiently in the structure to place the guidelines in parallel relation to the path; and

engaging the flexible guidelines with the object to guide it along the path.

4,367,797

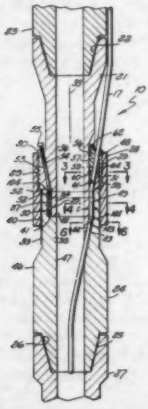
CABLE TRANSFER SUB FOR DRILL PIPE AND METHOD

Robert L. Brown, Buena Park, Calif., assignor to AMF Incorporated, White Plains, N.Y.

Filed Aug. 25, 1980, Ser. No. 180,808

Int. Cl.³ E21B *47/00*

U.S. Cl. 166—380 **30 Claims**



14. The method that comprises:

connecting to the upper end of a drill string a first tubular member of a transfer sub assembly;

lowering a cable into the string through said first tubular member; and

then connecting a second tubular member of the sub assembly to said first tubular member with said cable extending between opposed portions of said two tubular members from the interior of the first tubular member to the exterior of the second tubular member for extension to the surface of the earth at the outside of the drill string.

4,367,798

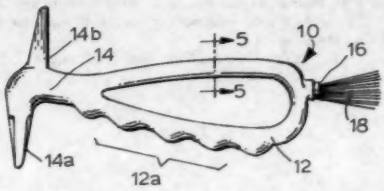
HORSE HOOF CLEANING TOOL

Linda M. Sabol, 4270 Potomac Ave., West Palm Beach, Fla. 33406

Continuation of Ser. No. 74,433, Sep. 16, 1979, abandoned. This application May 18, 1981, Ser. No. 264,356

Int. Cl.³ A01L *11/00*

U.S. Cl. 168—45 **2 Claims**



1. A combination tool for performing all operations necessary to clean and care for a horse's hoofs including manually picking, scraping, and brushing the horse's hoofs comprising:

an elongated, narrow, generally open-centered rigid body, said body having an upper portion, a lower portion, a first end, a mid portion, and a second end, said body lower portion including undulations for receiving the fingers of a user, said first end including first and second protrusions lying in the plane of the body, and perpendicular to the longitudinal axis of said body said first protrusion being substantially conical in shape tapering toward the protruding end to a rounded point, said first protrusion including first and second flatened portions on opposing sides of said first protrusion, said flatened portions lying and facing in the plane of the body, said second protrusion being substantially trapazoidal in shape, with the outer protruding end being wider than the inner portion, said second protrusion having flatened edge portions on opposing edges of said second protrusion which lay in the plane of the body, said second protrusion having flatened side portions on opposing sides of said second protrusion which are generally perpendicular to the longitudinal axis of said body tapering toward the protruding end to a relatively sharp straight straper edge; and

a brush having a plurality of bristols, said brush being attached to said second end of said body said bristols of said brush extending in a direction in the plane of said body, whereby said tool first protrusion is useful for dislodging clay or mud from the interior of a horse's hoof, said second protrusion can be used for scraping mud and dirt from the outer areas of the horse's hoof, and the brush can be used for cleaning the horse's hoof.

4,367,799

APPARATUS FOR CONTINUOUS DISCHARGE OF MATERIAL AT LOCALIZED DAMAGE POINT

William B. Tarpley, Jr., West Chester, Pa., assignor to Energy & Minerals Research Co., Exton, Pa.

Division of Ser. No. 945,969, Sep. 26, 1978, Pat. No. 4,274,491. This application Feb. 2, 1981, Ser. No. 230,220

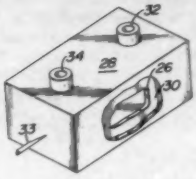
The portion of the term of this patent subsequent to Jun. 23, 1982, has been disclaimed.

Int. Cl.³ A62C *35/10*

U.S. Cl. 169—46 **19 Claims**

1. A dispenser in combination with chamber means, said dispenser comprising means defining a confined space associated with said chamber means and containing a pressurized thixotropically gelled material, comprising a thixotropically

gelled suspension of fire suppressant powder in liquefied gas, said means defining said confined space being constructed of a



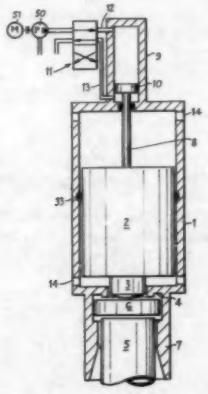
substance selected from the group consisting of readily breakable and meltable substances so as to allow discharge of said material when said substance is broken or melted.

4,367,800

SUBSEA PILE DRIVER

Dirk Arentsen, Leiderdorp, Netherlands, assignor to Hollandsche Beton Groep N.V., Rijswijk, Netherlands

Filed Feb. 26, 1980, Ser. No. 124,701
Int. Cl.³ E02D 7/02, 7/06
U.S. Cl. 173—127 8 Claims



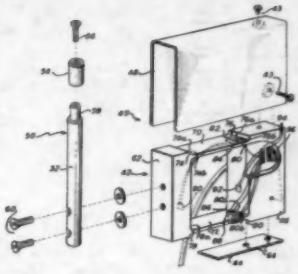
1. Underwater pile driving apparatus comprising a housing having means defining an opening in its bottom end, a motor driven pump producing a pressurized driving liquid, and a hammer movable upwards and downwards in said housing and which is driven in at least the upward direction by said pressurized driving liquid and is arranged to deliver, through said opening, an impact to a pile to be driven, said housing in which the hammer moves being filled, during operation, with the driving liquid which is present both above and below the hammer, the housing enclosing the liquid in which the hammer moves, the pump being in communication with the liquid in the housing through a closed circuit system, and pressure and volume compensating means being provided between the liquid in the housing and the ambient water. whereby the liquid in the housing is maintained substantially at the pressure of the ambient water in which the apparatus is submerged.

4,367,801

LOAD CELL FOR USE WITH ELECTRONIC COUNTING AND WEIGHING SCALES

James S. Bryan, Harrisburg, Pa., assignor to Pennsylvania Scale Company, Leola, Pa.

Continuation of Ser. No. 949,204, Oct. 6, 1978, abandoned. This application Apr. 22, 1981, Ser. No. 256,551
Int. Cl.³ G01G 3/14
U.S. Cl. 177—211 8 Claims



1. A weighing scale comprising:

(a) a weighing platform;

(b) a parallelogram shaped frame having a first vertical member connected to support said frame a second vertical member connected to said weighing platform for receiving vertically directed forces to be measured, and first and second horizontal flexure members extending between the upper and lower ends of said first and second vertical members and to define said parallelogram, said horizontal flexure members having corner flexure region adjacent the junction thereof with each of said first and second vertical legs;

(c) a first pair of strain gauges mounted directly one above the other at one corner flexure region of one of said horizontal flexure members with one of said strain gauges mounted on an upper surface and the other on a lower surface of the flexure member;

(d) a second pair of strain gauges mounted directly one above the other at a corner flexure region of the other horizontal flexure region directly below the first pair of strain gauges in vertical alignment therewith, said second pair of strain gauges being mounted one on the upper surface and the other on the lower surface of the second flexure member;

(e) the ends of the horizontal flexure members, remote from the corner flexure regions having the strain gauges thereat, being free of strain gauges whereby the free ends of the horizontal flexure members may be adjusted by machining and the like to compensate for symmetry errors arising during fabrication and assembly of the parallelogram shaped frame; and

(f) means to connect each of said strain gauges into arms of a Wheatstone bridge whereby second order bending moments produced at the corner flexure regions by a "longitudinal off-set loading" and varying as a square of the applied load are cancelled.

4,367,802

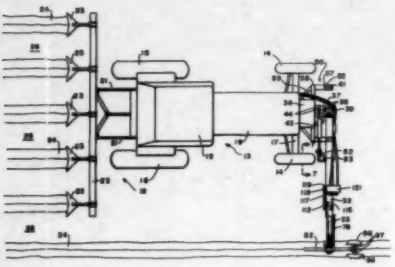
AUTOMATIC STEERING MECHANISM FOR USE ON APPARATUS FORMING BEDS OF UNIFORM WIDTHS AND ROWS OF UNIFORM SPACING

Alonzo B. Stiff, and Gilbert L. Harris, both of Brawley, Calif., assignors to Russell Eugene Jordan, Brawley, Calif.

Continuation of Ser. No. 88,412, Oct. 26, 1979, abandoned. This application Feb. 25, 1981, Ser. No. 237,870

Int. Cl.³ B62D 5/06

U.S. Cl. 180—131 31 Claims



16. In an automatic steering mechanism for use on apparatus for forming beds of uniform widths and rows of uniform spacing, the apparatus being of a type comprising a self-propelled vehicle having a steering apparatus for steering the vehicle, and a ground engaging implement carried by the vehicle for forming an indentation in the ground, the steering mechanism comprising a framework structure adapted to be secured to the front end of the vehicle, a boom structure, means for mounting the boom structure on the framework for pivotal movement about a horizontal axis parallel to the longitudinal axis of the vehicle, an arm, means pivotally mounting the arm intermediate its ends on the outer extremity of the boom structure for rotation about a horizontal axis substantially parallel to the first named horizontal axis, indentation following means carried by each end of the arm, means secured to said arm for dampening the motion of said arm, stops carried by said boom structure for limiting the pivotal movement of said arm, said indentation following means being capable of following an indentation in the ground made by the ground engaging implement in a previous pass through the field, a source of hydraulic fluid under pressure, a steering valve connected to the source of hydraulic fluid, a control linkage connecting said arm to said control valve and means adapted to connect said control valve to said steering apparatus whereby when said indentation following means causes operation of the steering valve hydraulic fluid will be supplied to the steering apparatus to automatically steer the vehicle in accordance with movement of the indentation following means.

4,367,803

STEERING SYSTEM

Richard A. Wittren, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Mar. 16, 1981, Ser. No. 244,394

Int. Cl.³ B62D 5/10; F15B 9/02

U.S. Cl. 180—153 10 Claims

1. A steering system comprising:

(a) first and second steering cylinders each having a piston with a piston rod extending through one end thereof and each cylinder having a head chamber and first and second feedback chambers;

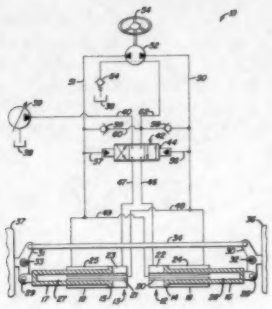
(b) link means for connecting said first and second cylinders to a pair of steerable wheels so that said cylinders can operate simultaneously;

(c) a fluid reservoir;

(d) a supply pump connected to said reservoir for supplying pressurized fluid to said head chambers of said cylinders;

(e) a plurality of passage means, a first for fluidly connecting said first feedback chamber of said first cylinder to said second feedback chamber of said second cylinder, a second for fluidly connecting said second feedback chamber of said first cylinder to said first feedback chamber of said second cylinder, and a third for fluidly connecting together said first and second passage means;

(f) valve means for selectively controlling the flow of said



pressurized fluid from said supply pump to said head chambers of said steering cylinders, said valve means connected across said third passage means and actuatable by pressure differences in said third passage means;

(g) a metering pump connected across said third passage means for facilitating movement of said fluid between said feedback chambers of said first and second cylinders and thereby causing a pressure difference across said third passage means; and

(h) a manually operable steering element connected to said metering pump for controlling the steering of said wheels.

4,367,804

VEHICLE CONSTANT SPEED DRIVING APPARATUS

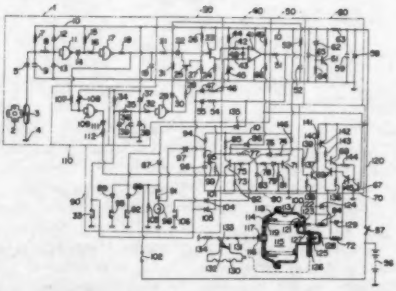
Naoji Sakakibara, Chiryu, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Japan

Filed Oct. 1, 1980, Ser. No. 192,873

Claims priority, application Japan, Oct. 3, 1979, 54-127471

Int. Cl.³ B60K 31/00

U.S. Cl. 180—176 2 Claims



1. A vehicle constant speed driving apparatus comprising:

means for providing a vehicle actual speed signal;

means for providing a vehicle target speed signal;

means for comparing said vehicle actual speed signal and said vehicle target speed signal and for generating a throt-

tle valve control signal representing the difference between said compared signals;

a vacuum actuator including a vacuum chamber for controlling a throttle valve, a normally-closed releasing valve for coupling, when open, said vacuum chamber to the ambient atmosphere, a releasing valve solenoid for selectively opening said releasing valve, a modulator valve for coupling, when open, said vacuum chamber to the ambient atmosphere and for coupling, when closed, said vacuum chamber to a pressure source, and a modulator valve solenoid disposed in substantially the same thermal condition as the releasing valve solenoid for selectively opening and closing said modulator valve; and

a current control circuit responsive to said throttle valve control signal for selectively supplying a constant current to said releasing valve solenoid and a voltage varied by said constant current to said modulator valve solenoid to compensate for the effects of changes in the temperature of said releasing valve solenoid and said modulator valve solenoid and to control the pressure in said vacuum chamber thereby controlling the opening of said throttle valve to minimize the difference between said vehicle actual speed signal and said vehicle target speed signal.

4,367,805

GOVERNING CONTROL APPARATUS FOR AUTOMOBILES

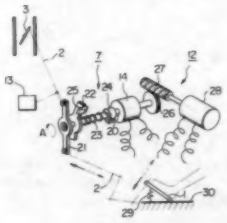
Shinzo Totani, Nagoya; Takaaki Kato, Toyohashi; Yoshikazu Mizuno, Aichi, and Munetaka Noda, Chiryu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 3, 1980, Ser. No. 203,147

Claims priority, application Japan, Nov. 26, 1979, 54-152639

Int. Cl.³ B60K *31/00*

U.S. Cl. 180—179 **5 Claims**



1. A governing control apparatus for an automotive vehicle comprising:

vehicle speed adjusting means for controlling the speed of an engine of said vehicle so as to control the running speed of said vehicle;

actuating means adapted for control by a vehicle operator for operating said speed adjusting means;

vehicle speed sensing means for sensing the actual running speed of said vehicle;

setting means for setting a desired running speed of said vehicle; and

load adjusting means responsive to said vehicle speed sensing means and to said setting means for applying to said actuating means a counter-force which opposes and limits movement of said actuating means in a direction to accelerate said vehicle when said running speed sensed by said sensing means reaches said desired running speed, wherein said load adjusting means comprises:

a drive shaft;

an intermediate first movable member rotatably mounted on said drive shaft for transmitting a movement of said actuating means to said speed adjusting means;

a second movable member rotatably mounted on said drive shaft and disposed to come into and out of engagement with said first movable member for limiting a range of movement of said first movable member in the direction to accelerate said vehicle;

control means responsive to said actuating means, said vehicle speed sensing means and said setting means for moving said second movable member to variably control the movement limiting position thereof so that the running speed of said vehicle is adjusted to said desired running speed,

electromagnetic clutch means for transmitting a drive output of said control means to said second movable member by way of said drive shaft; and

spring means mounted on said drive shaft for applying a limiting force opposing the rotary movement of said second movable member adapted to be engaged with and rotated by said first movable member.

4,367,806

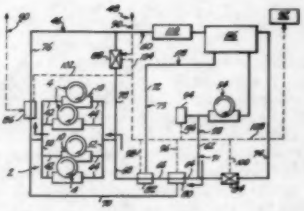
COMBINED DRIVE AND BRAKE MECHANISM FOR A WHEELED VEHICLE CARRIAGE

Amos H. Ramquist, 13722 NE. 70th Pl., Redmond, Wash. 98052

Filed Oct. 8, 1980, Ser. No. 195,316

Int. Cl.³ B60K *17/14*

U.S. Cl. 180—308 **15 Claims**

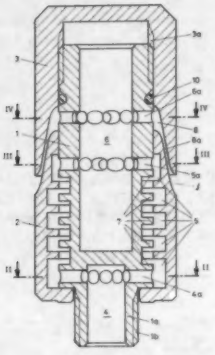


1. In combination, a wheeled vehicle carriage and a combined drive and brake mechanism for the same comprising a hydraulic circuit having a power driven pump, a reservoir for hydraulic fluid, and a motor for each wheel or two or more coaxial wheels of the carriage, the motor having a movable driven member therein and ports for the infeed and outfeed of fluid therethrough, and there being connecting means between the pump, the reservoir and the ports whereby the fluid can be circulated through the motor to drive the driven member thereof, a connection between the driven member of the motor and the corresponding wheel or wheels whereby the motion of one is directly transmitted to the other and vice versa, depending on which is being driven at faster speed, means in the hydraulic circuit for varying the speed of the driven member, and means whereby the vehicle operator can control the speed varying means to adjust the rotational speed of the respective wheel or wheels of the carriage in relation to the speed of the vehicle, the connecting means including means whereby the hydraulic circuit can be programmed to assume (1) a mode of operation in which the pump output is fed to the motor to drive the driven member thereof at the relatively faster speed, or (2) a mode of operation in which the motor is connected to the reservoir in suction and the pump output is bypassed to the reservoir independent of the motor, and the control means including means whereby the vehicle operator can cause the circuit programming means to program the circuit to assume the first mentioned mode of operation, and means responsive to a predetermined pressure in the pump output to cause the circuit programming means to program the circuit to assume the second mentioned mode of operation.

4,367,807
SOUND ABSORBER FOR COMPRESSED-AIR OPERATED APPARATUSES, IN PARTICULAR COMPRESSED AIR VIBRATORS

Willy Fink, Giersbergstrasse CH-8479 Waltalingen, Switzerland, and Alex Fehr, Henggart, Switzerland, assignors to Willy Fink, Waltalingen, Switzerland

Filed May 29, 1981, Ser. No. 268,487
Claims priority, application Switzerland, May 30, 1980, 4245/80
Int. Cl.³ F01N *1/08*
U.S. Cl. 181—230 3 Claims

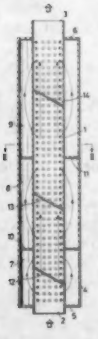


1. A sound absorber for compressed air-operated apparatuses, comprising a body having an inlet connector, connectable to an outlet aperture of the air-operated apparatus, and further comprising a plurality of sequentially arranged relief chambers for the compressed air, said inlet connector being coupled to a first chamber (4) having first through-bores (4*a*) extending therefrom to a second chamber (5), which includes an elongate, annular hollow chamber having an outer wall and contains therein labyrinth-like baffles (7), said second chamber (5) further being connected by second through-bores (5*a*) to a third chamber (6) which includes third through-bores (6*a*) extending to an annular outlet slit (8*a*), and said outlet slit having an adjustable cross-section.

4,367,808
SILENCER

Olov T. Öberg, 21 Strutsgatan, S-961 00 Boden, Sweden

Filed Jul. 6, 1981, Ser. No. 280,806
Int. Cl.³ F01N *1/08*
U.S. Cl. 181—272 2 Claims

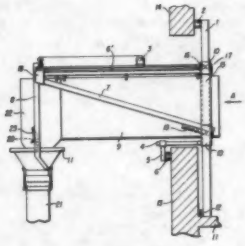


1. A silencer for exhaust gases from combustion engines, comprising a pipe (1) which is perforated along the wall thereof and provided with an inlet (2) and an outlet (3), and in the interior of which there are arranged fixed intermediate walls (12,13,14) which connect with the inner surface of said pipe, and which pipe (1) is surrounded by a gas-impermeable shell (4,5,6) which forms a space between itself and said pipe, said space being divided into a plurality of damping chambers (7,8,9), by partitions (10,11) abutting the shell and the pipe, said partitions being located between the intermediate walls, permitting exhaust gases to flow out of the pipe in front of an intermediate wall and into an adjacent damping chamber and from there back into the pipe behind said intermediate wall, characterized in that each intermediate wall (12,13,14) is provided with a plurality of through-flow openings (e.g. 15,16) so as to create a flow of exhaust gas in the axial direction of the perforated pipe which meets the flow of incoming gas in front of said intermediate wall.

4,367,809
APPARATUS FOR CONVEYING RUBBLE

Reinhard Eikelmann, Buchengrund 10, 4955 Hille 1, Fed. Rep. of Germany

Filed Sep. 10, 1980, Ser. No. 185,987
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1979, 2936594
Int. Cl.³ B65G *11/00*; E04F *17/12*
U.S. Cl. 182—48 4 Claims



1. An apparatus for conveying rubble comprising
a pair of spaced upright supports;
an upper cross-piece detachably connected to said supports;
a pair of tensioning arms, each said arm extending outwardly of a respective support;
a pair of downwardly-directed support legs, each said leg being movably mounted on a respective tensioning arm;
a second cross-piece detachably connected to said support legs;
a pair of cantilevers extending outwardly from said supports, each cantilever being detachably connected to a respective support;
a suspension device for supporting a rubble chute connected to said cantilevers;
pulling devices mounted on said cantilevers for raising and lowering said suspension device; and
a foldable tray suspended from said cantilevers to define a walkway.

4,367,810
ELEVATOR CAR AND DOOR MOTION INTERLOCKS

John C. Doane, Glastonbury, Conn.; J. Mark Deric, Johnson City, Tenn., and Gary K. Roberts, Enfield, Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Dec. 27, 1979, Ser. No. 107,691
Int. Cl.³ B66B *5/02*
U.S. Cl. 187—29 R 4 Claims

1. An elevator for servicing a plurality of floor landings,

served by doors, adjacent an elevator hoistway in a building, comprising:

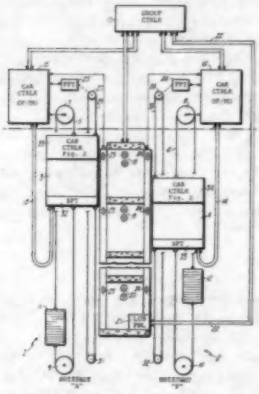
hall call means for registering requests for up or down service at each of said landings;

a car movably disposed in said hoistway;

car motion means for providing and arresting the motion of said car;

car controller means for providing signals indicative of conditions of said car, of said car motion means and of the hoistway doors, for exchanging signals with said car, for controlling said car motion means to cause said car to move in a selected up or down direction in said hoistway and to stop in response to said signals indicative of conditions of said car and of said car motion means and to signals received from said car and said hall call means;

said car including a door for providing access to and from said car, a door motion means for opening and closing said door, switch means for registering calls for service by passengers in said car, and a cab controller means for providing cab signals indicative of calls for service registered by said switch means and safety-related functions including the position of said car relative to an adjacent floor landing and the open or closed status of said door, for exchanging signals including said cab signals with said car controller, and for controlling said door motion means



in response to said cab signals and in response to signals received from said car controller; characterized by

said car controller including car motion inhibit means operative in either of two states for enabling said car motion means to move said car when in a first one of said states and for forcing said car motion means to arrest the motion of said car when in the second one of said states;

said car including door inhibit means operative in either of two states for enabling said cab controller to control said door motion means to move said door when in a first one of said states and for forcing said door motion means to be unresponsive to said cab controller when in the second one of said states;

said cab controller means comprising signal processing means for providing a car motion inhibit signal in response to said cab signals indicative of said safety-related functions indicating an unsafe condition of said car, and for setting said car motion inhibit means into said second state in response to said car motion inhibit signal; and

said car controller means comprising signal processing means for providing, in response to said signals indicative of conditions, an inhibit door signal indicative of one of said hoistway doors being open concurrently with said car not being within a permissible distance of any of said door landings or concurrently with said car having a velocity in excess of a permissible velocity, and for setting said door inhibit means into said second state in response to said inhibit door signal.

4,367,811

ELEVATOR CONTROL SYSTEM

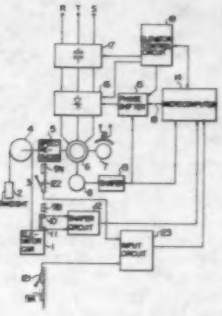
Kenji Yoneda; Kazuhiro Sakata; Takeo Yuminaka; Masao Nakazato; Tomiaki Kurihara; Soshiro Kuzunuki, all of Katsuta, and Yasunori Katayama, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 20, 1981, Ser. No. 236,608

Claims priority, application Japan, Feb. 22, 1980, 55-20442

Int. Cl.³ B66B *1/18*

U.S. Cl. 187—29 R **9 Claims**



1. An elevator control system comprising:

an elevator car moving in a hatchway in a building structure with a plurality of floors;

means for providing distance pulses in proportion to the distance travelled by the car;

means for detecting the landing of the car at each floor;

means for memorizing floor height data indicative of the distance of the landing position at each floor from a reference point in the hatchway, said memorizing means being capable of renewing memorized data;

means for counting said distance pulses;

means for controlling the elevator traffic at least according to a car position obtained from said counting means and the memorized floor height data stored in said memorizing means;

means for generating a floor height measurement run request signal;

means for setting said counting means under the control of said floor height measurement drive request signal to drive the car in the up or down direction from a predetermined position relative to the hatchway; and

means for loading the count of said counting means into said renewable data memory means under the control of said landing detecting means.

4,367,812

CONTROL APPARATUS FOR TORQUE CONVERTER DIRECT COUPLING CLUTCH IN AUTOMATIC TRANSMISSIONS

Kouzi Kobayashi, Toyota, and Keizo Kobayashi, Anjo, both of Japan, assignors to Aisin-Warner Kabushiki Kaisha, Aichi, Japan

Filed Aug. 18, 1980, Ser. No. 178,766

Claims priority, application Japan, Aug. 18, 1979, 54-105143

Int. Cl.³ B60K *41/22*; F16D *33/00*

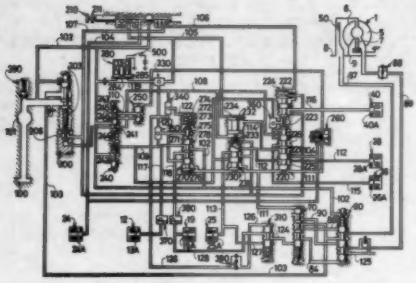
U.S. Cl. 192—3.3 **9 Claims**

1. A control apparatus for torque converter direct coupling clutch for the automatic transmission of the type including a torque converter to which a direct coupling clutch is disconnectably to be direct-coupled and a gear transmission having a

plurality of friction engaging elements for providing a plurality of shift ranges comprising;

(a) maximum speed shift range selector means for selectively providing any desired maximum speed shift range according to the vehicle driver,

(b) switch valve means for switching over between a connection from a hydraulic power source to a hydraulic line for engaging the direct coupling clutch and a connection



from the hydraulic power source to a hydraulic line for releasing the direct coupling clutch; and

(c) lockup valve means for providing a hydraulic pressure output which enables the switch valve means to connect between the hydraulic power source and the hydraulic line for engaging the direct coupling clutch, the lockup valve means being adapted only to provide its output in each of the maximum speed shift ranges selected by the vehicle driver.

4,367,813

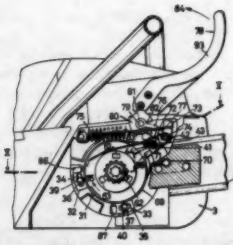
MECHANISM TO CONTROL POWER CHAIN SAW CLUTCH OPERATION

Dieter Wieland, Neckarrems, and Walter Merz, Auenwald, both of Fed. Rep. of Germany, assignors to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Continuation of Ser. No. 776,750, Mar. 11, 1977, abandoned. This application Feb. 2, 1979, Ser. No. 8,976

Int. Cl.³ B60K *41/24*

U.S. Cl. 192—17 R **14 Claims**



1. A power saw, especially power chain saw, which includes in combination: motor means having a drive shaft, a sprocket wheel, an intermediate clutch including clutch elements interposed between and drivingly connected to said motor means and said sprocket wheel, and movable selectively from a disengaged position to an engaged position and vice versa, a housing enclosing said intermediate clutch, a control member operatively connected to said intermediate clutch and operable to selectively shift said intermediate clutch from engaged position to disengaged position and vice versa, actuating means operatively connected to said control member for selectively moving the latter from a first position in which it holds said intermediate clutch in engaged position to a second position in which said control member is held in disengaged position, a follower member movable from an effective position in which said motor means having said drive shaft is operatively connected with said sprocket wheel to an ineffective position and vice versa for respectively connecting and disconnecting said clutch elements connected to said intermediate clutch and comprising a centrifugal clutch portion having a centrifugal weight carrier and a clutch drum, a brake member operatively connected to said clutch drum, said brake member comprising a brake band looped around said clutch drum, holding means movably mounted on said housing, a said control member and said brake band having one end mounted in common on said holding means, spring means continuously urging holding means into ineffective position for disengagement of said brake band and for disengagement of said control member, means associated with said actuating means for holding said control member and said brake band in disengaged position against the thrust of said spring means, said holding means alone being effective upon said control member and said brake band in a shock-like manner relative to said clutch drum in a minimum time without delay to assure operator safety, said holding means comprising at least one extension extending in about the axial direction of said intermediate clutch and said centrifugal clutch portion, said control member and said one end of said brake band being mounted on said extensions, and a supporting member connected to said drive shaft for rotation therewith, said follower member being supported by said supporting member in axial direction of said motor shaft, said supporting member having that side thereof which faces away from said follower member in engagement with said centrifugal clutch portion, the extensions of said centrifugal clutch portion being in conformity with the speed of said motor shaft, said follower member for engagement and disengagement being shiftable by said control member directly in axial direction, said follower member doing axial shifting thereof being positively guided upon the centrifugal weight carrier of said centrifugal clutch portion.

4,367,814

SAFETY LIFT AND TIE-DOWN APPARATUS FOR PORTABLE ELEVATORS AND THE LIKE

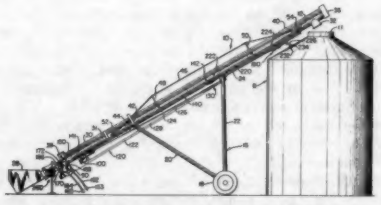
Wendell M. Young, Berlin, N. Dak. 58415

Continuation-in-part of Ser. No. 817,156, Jul. 20, 1978, Pat. No. 4,206,839. This application May 27, 1980, Ser. No. 153,603

The portion of the term of this patent subsequent to Jun. 10, 1997, has been disclaimed.

Int. Cl.³ B65G *43/00*

U.S. Cl. 198—301 **9 Claims**



1. In elevator apparatus having elongated conveyor means for conveying material, the improvement comprising:

powered lift means for raising one end of said conveyor means, and tie-down limit stop means on said conveyor for simultaneously attaching said conveyor means to an anchor to prohibit the conveyor means from being moved more than a predetermined distance away from the anchor and prohibiting said powered lift means from operating to apply a lifting force to raise said one end of said conveyor means beyond the range allowed by the anchor.

4,367,815

APPARATUS FOR STACKING NOTE BOOKS OR THE LIKE

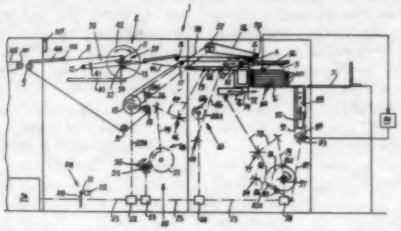
Paul Fabrig, Neuffen, Fed. Rep. of Germany, assignor to Womako Maschinenkonstruktionen GmbH, Nürtingen, Fed. Rep. of Germany

Division of Ser. No. 959,831, Nov. 13, 1978, Pat. No. 4,268,200. This application Oct. 16, 1980, Ser. No. 197,675

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1977, 2752372

Int. Cl.³ B65G 47/24

U.S. Cl. 198—374 7 Claims



1. In an apparatus for manipulating substantially flat commodities, such as note books or pads, the combination of means for transporting a succession of commodites in identical orientation in a predetermined direction and along a predetermined path; orientation changing means adjacent said path and actuatable to change the orientation of selected commodities in said path, said orientation changing means including a pocket having an opening and being movable between a first position in which said opening is located in the path of an oncoming commodity and a second position in which said opening allows the commodity to leave said pocket by moving in said direction; and means for actuating said orientation changing means including means for pivoting said pocket about an axis which is substantially normal to said direction and means for moving said pocket and said axis in said direction during movement of said pocket from the first to the second position and counter to said direction during movement of said pocket from the second to the first position.

4,367,816

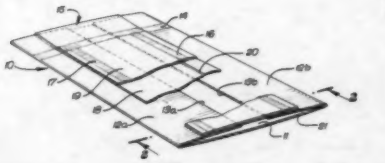
TEAR STRIP FOR GAS STERILIZABLE PACKAGE AND PACKAGE

Kenneth R. Wilkes, 1410 E. 15th St., Los Angeles, Calif. 90021

Filed Jun. 10, 1981, Ser. No. 272,186

Int. Cl.³ B65B 61/18; B65D 65/40, 75/30

U.S. Cl. 206—439 24 Claims



1. A tear strip for a gas sterilizable package of the type comprising a plastic bag having an access opening and a gas permeable tear strip peelably sealed to said bag around said access opening which comprises:

a. a plastic sheet having a perforated area; and

b. a gas permeable sheet sealed to said plastic sheet with a plurality of line seals enclosing said perforated area.

4,367,817

COLOR DISCRIMINATING MACHINE

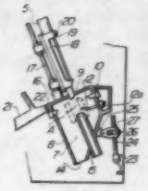
Toshihiko Satake, Higashihiroshima, Japan, assignor to Satake Engineering Co., Ltd., Tokyo, Japan

Filed Feb. 17, 1981, Ser. No. 234,749

Claims priority, application Japan, Feb. 22, 1980, 55-22065

Int. Cl.³ B07C 5/342

U.S. Cl. 209—580 3 Claims



1. The combination comprising:

a color discriminating machine comprising means for supplying granular materials having incorporated therein granular materials of colors different from that of the granular material of interest, means for feeding granular materials supplied to the machine, an inclined downward-flow trough located on the outlet end of said granular material feeding means, and a photoelectric discriminating chamber connected to the lower end of said downward-flow trough, said photoelectric discriminating chamber having mounted therein a photoelectric sensing device directing a light beam against a flux of granular materials flowing straight from the downward-flow trough into the photoelectric discriminating chamber and detecting a light beam reflected or transmitted by the granular materials of different colors, and air injection nozzle means electrically connected through a control circuit to said photoelectric sensing device so as to be actuated by an output of said photoelectric sensing device for separating the granular materials of different colors from the flux of granular materials; and

a downward-flow trough angle adjusting device comprising downward-flow trough mounting means secured to the photoelectric discriminating chamber for detachably mounting said downward-flow trough, and angle adjusting means connected to said photo electric discriminating chamber for adjusting the angle of inclination of said downward-flow trough.

4,367,818

FORWARD FEED MERCHANDISING DEVICE FOR SOFT DRINK BOTTLES

James M. Suttles, Elberton, Ga., assignor to The Mead Corporation, Atlanta, Ga.

Filed Aug. 18, 1980, Ser. No. 178,933

Int. Cl.³ A47F 7/28

U.S. Cl. 211—49 D 9 Claims

1. A merchandising device for bottles having integrally formed, externally projecting neck rings comprising track means providing a pair of substantially parallel supporting surfaces having opposed edges spaced from each other to form a slot of substantially uniform width adapted to receive the necks of said bottles underneath said neck rings, and means supporting said track means in a fixed position, in which said track means comprises at least one removable, elongated track element providing one of said opposed edges, said supporting means and said track means including means for removably supporting said removable elongated track element in a first position such that said slot has a first width and in a second position such that said slot has a second and different width, whereby bottles having different neck widths can be accommodated;

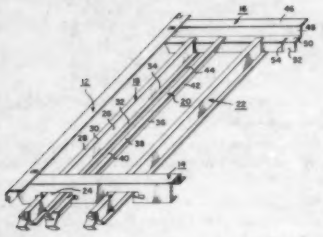
said supporting means comprising first and second support-

ing members spaced from each other in the direction of elongation of said track element;

said track element being in engagement with both of said first and second supporting members and a portion of said track element extending between said first and second support members;

said first supporting member comprising, means engageable by a first portion of said elongated track element, for:

(a) locking said first portion of said track element against rotation beyond a limit in a first direction about an axis parallel to its direction of elongation while permitting rotation in the direction opposite to said first direction; and



(b) locking said first portion of said track element against lateral and longitudinal translation when said element is rotated to its limit in said first direction;

said second supporting member comprising means removably engageable by a second portion of said elongated track element longitudinally spaced from said first portion, for preventing lateral translation thereof and for preventing rotation thereof relative to said means removably engageable by said elongated track element; and

having resilient means for resisting rotation of said first portion of said track element in said opposite direction.

4,367,819

DISPLAY RACK

Lawrence A. Lewis, Englewood, N.J., assignor to Clip Strip Corporation, South Hackensack, N.J.

Filed Jul. 30, 1980, Ser. No. 173,817

Int. Cl.³ A47F 5/08

U.S. Cl. 211—59.1 **9 Claims**

1. A display rack comprising a relatively long and narrow support member with a back face for for facing a support, a front face and lateral side edges, said support member having at least one projection extending from said front face, said projection having an outer surface extending around a line which extends transversely to said front face and having a first plurality of hook receiving openings in said surface which face in a direction transverse to said line and said openings being spaced apart in a direction peripherally of said line, said projection also having a second plurality of openings therein, each of said second plurality of openings being respectively on the opposite side of said line from one of said first plurality of openings, and a relatively long and narrow hook having a free end for receiving an article to be displayed and an opposite end for engaging said projection, said opposite end having an arm extending transversely to the length of said hook which is J-shaped and thereby has a longer leg joined to a shorter leg by an intermediate leg, said shorter leg having a free end and said free end of said shorter leg being detachably receivable in any one of said openings, whereby said support member may be mounted with the length thereof oriented in either of two directions transverse to each other and said arm of said free end of said shorter leg may be inserted into an opening selected to cause said arm to be substantially parallel to the length of said support member when the length of the latter is oriented in one of said two directions and into another opening selected to cause said arm to be substantially perpendicular to the length of said support member when the length of the latter is oriented in the other of said two directions, said hook also comprising a further arm extending therefrom in opposition to the shorter leg of said first-mentioned arm, whereby when the free end of said shorter leg of said first-mentioned arm is received in one of the first plurality of openings the further arm is received in the opposite one of said second plurality of openings.

4,367,820

SATURATED POLYESTER RESIN BOTTLE AND STAND

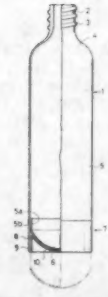
Yataro Yoshino, Tokyo; Takami Tsukada, Funabashi; Tadao Saito, and Takamitsu Nozawa, both of Tokyo, all of Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

PCT No. PCT/JP79/00162, § 371 Date Mar. 3, 1980, § 102(e) Date Mar. 3, 1980, PCT Pub. No. WO81/00009, PCT Pub. Date Jan. 8, 1981

PCT Filed Jun. 22, 1979, Ser. No. 251,530

Int. Cl.³ B65D 23/00

U.S. Cl. 215—12 R **3 Claims**



1. In combination: a saturated polyester resin bottle including a mouth, a generally cylindrical drum portion, a reduced diameter portion at the lower end of said drum portion, and generally downwardly bulged bottom wall; and a bottle stand having an outer circumferential wall for close concentric reception over said reduced diameter portion of said bottle, said outer circumferential wall being a cylindrical smooth wall of the same diameter as the drum portion of the bottle, an inner circumferential wall combining with said outer wall to define a flat supporting base and extending upwardly therefrom gen-

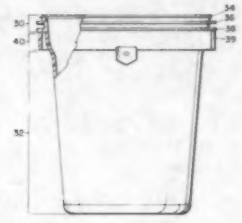
erally concentrically with respect to said outer wall so that the inner wall touches the inner surface of the outer wall adjacent the lower end portion of the drum portion, and a center portion formed integrally with said inner wall for supporting the bottom wall of said bottle.

4,367,821

PAINT PAIL WITH DEPENDING SKIRT FOR LABEL ATTACHMENT

William G. Holt, Raynham, Mass., assignor to Hercules Incorporated, Wilmington, Del.

Filed Sep. 12, 1980, Ser. No. 186,875
Int. Cl.³ B65D *1/12*
U.S. Cl. 220—72 **6 Claims**



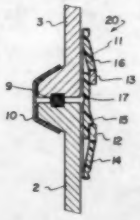
1. A container comprising:
an injection molded annular mouth portion having detail of high definition,
a generally cylindrical body portion blow molded from a parison injection molded integrally with the mouth portion, said body portion having a closed bottom and an inside diameter slightly larger than the inside diameter of the mouth portion, and
an annular reinforcing region joining the mouth portion to the body portion and forming a transitional surface therebetween,
in which the detail of high definition provided in the mouth portion includes as an outside wall over said reinforcing region an annular depending skirt which is integrally injection molded as a feature of the mouth portion.

4,367,822

AIRTIGHT RECEPTACLE LOCK FOR EMERGENCY RESPIRATORS

Adalbert Pasternack, Bad Schwartau, and Claus-Dieter Hinz, Lübeck, both of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 13, 1981, Ser. No. 253,542
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1980, 3032416
Int. Cl.³ B65D *55/02, 55/06*
U.S. Cl. 220—265 **4 Claims**



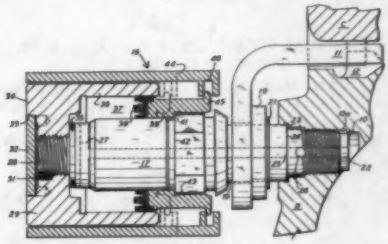
1. In a gas tight receptacle, particularly for an emergency respirator, which includes a bottom part, a cover part, a seal between the bottom and cover parts and closure means holding the parts together, a safety lock comprising:
an eyelet connected in the cover part;
an eyelet connected in the bottom part; and
a locking member having a first elastic tongue and stop engaged with one of the eyelets for holding the locking member fixed with respect to the one eyelet, a second elastic tongue engaged with the other eyelet for holding the locking member fixed with respect to the second eyelet in at least one direction, the locking member having a weakened area adapted to be broken for removal of the cover part from the bottom part.

4,367,823

LOCKING DEVICE FOR CONNECTORS AND CLOSURES

Clarence L. Raver, Houston, Tex., assignor to Thornhill-Craver Company, Houston, Tex.

Filed Oct. 8, 1981, Ser. No. 309,714
Int. Cl.³ B65D *45/00*
U.S. Cl. 220—316 **10 Claims**



1. A connector comprising,
a pair of members adapted to sealingly engage each other,
means for holding said members in engagement and releasing said members upon rotation of said means,
a threaded port in one of said pair of members,
means including a plug in said port preventing rotation of said holding means,
a wrench surface on the plug,
a pressure responsive member slidable relative to the plug,
passage means in the plug exposing said pressure responsive member to pressure fluid in said port, and
a sheath carried by said pressure responsive member and movable axially therewith,
said pressure responsive member maintaining said sheath over said wrench surface when said port is pressurized,
said sheath movable to a position exposing said wrench surface when the pressure responsive member is not subjected to a pressure differential thereacross.

4,367,824

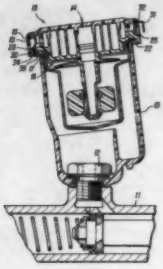
FLUID RESERVOIR WITH COVER FASTENING MEANS

Kaoru Tsubouchi, and Akira Funahashi, both of Toyota, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 13, 1981, Ser. No. 282,590
Claims priority, application Japan, Jul. 16, 1980, 55-100950[U]; May 29, 1981, 56-083347
Int. Cl.³ B65D *45/16*
U.S. Cl. 220—326 **9 Claims**

1. A fluid reservoir assembly including a reservoir cap for closing a cylindrical upper opening of said reservoir, said reservoir assembly comprising:
an outward flange formed on an outer periphery of an upper portion of said reservoir;
nail means provided on said reservoir cap and having a tip portion bent radially inwardly;

biasing means biasing said nail means into engagement with said outward flange; and



nail operating means connected to said nail means for moving said nail means by said nail operating means against said biasing means.

4,367,825

PRESSURE-RESISTANT HOUSING HAVING A RECTANGULAR LID

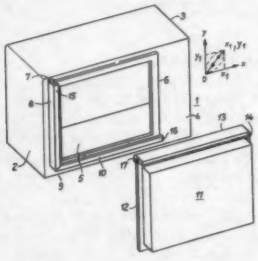
Kurt Pollerspöck, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 17, 1981, Ser. No. 303,077

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1980, 3035835

Int. Cl.³ B65D *43/20*

U.S. Cl. 220—346 **10 Claims**



1. A pressure-resistant housing of substantially prismatic configuration having a generaly rectangular opening, and comprising a lid of substantially rectangular shape and means for locking the lid adjacent to the opening to close the opening, said means being operative to generally diagonally move the lid towards the opening and lock the lid to the housing simultaneously at the four sides of the lid.

4,367,826

DISPENSING APPARATUS AND METHOD HAVING ABUTMENT STOP

Robert L. Glaser, Chicago, Ill., assignor to Single Vend, Inc., Chicago, Ill.

Filed Jan. 14, 1981, Ser. No. 225,095

Int. Cl.³ B65H *3/22*

U.S. Cl. 221—213 **18 Claims**

1. In a device for dispensing a single article of a stack of generally flat articles through a discharge opening from within an enclosure;

a support frame,

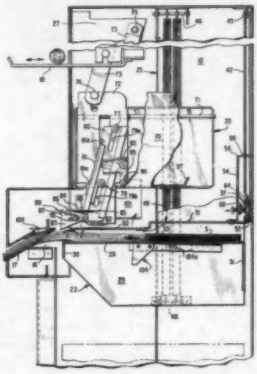
an elevator means mounted in said frame adapted for yieldable vertical reciprocable movement in said frame,

said elevator means having vertically extending lateral wall sections, spaced vertically extending rear wall sections and a substantially horizontal platform section which is adapted to support a plurality of articles in the form of a vertical stack,

a generally horizontally disposed abutment member supported by said frame substantially above the lower end of said frame opposite said discharge opening and extending into the interior of said enclosure,

said abutment member being movably supported on the lower end portion of an elongated panel member pivotally connected at the upper end thereof to said frame and disposed between the inner ends of said spaced rear wall sections of said elevator means,

said abutment member having contact means associated therewith at a point above the lower edge of said rear wall



sections adapted to engage said rear wall sections when said abutment member is moved upwardly by the uppermost of said articles in said stack supported on said platform section being yieldably urged into engagement with the lower surface of said abutment member and forming a frictional engagement between said rear wall sections and said panel member which holds said elevator means against further upwardly movement relative to said frame until said uppermost article in said stack is moved out of engagement with said abutment member, and

dispensing means supported within said enclosure for moving at least a portion of said uppermost article in said stack outwardly from the periphery of said stack while said elevator means is prevented being moved upwardly by said frictional engagement.

4,367,827

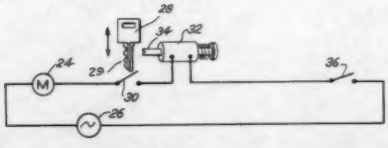
ANTITHEFT MECHANISM FOR GASOLINE PUMP

Gerald H. Keller, Palos Heights; Frank J. Senese, Hickory Hills, and John G. Vlasic, South Holland, all of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed Dec. 8, 1980, Ser. No. 214,186

Int. Cl.³ B67D *5/10*

U.S. Cl. 222—2 **7 Claims**



1. In a pump apparatus for dispensing gasoline or other fuel,

the improvement of security means to inhibit theft of fuel, said means including a remote control switch and also including a key operated relay connected in series with a power supply for the pump apparatus and the pump apparatus, said relay comprising, in combination:

a barrel having a slot for receipt of a key, said slot defining an axis;

a contact switch to be contacted by a key after insertion of that key into the slot;

a key gripping member aligned generally transverse to the axis and translatable in a passage in the barrel into and out of a position of engagement with the key positioned in the slot, said key gripping member comprising bifurcated arms projecting on opposite sides of the axis and slot for engagement with a bit of the key in the slot; and

solenoid means attached to the key gripping member to drive the member into and out of engagement with the key in the slot, said solenoid means in series with the contact switch to effect operation of the solenoid means for movement to engage the key and also in series with said remote control switch for release of the solenoid means upon operation of the remote switch.

4. In a pump apparatus for dispensing gasoline or other fuel, the improvement of security means to inhibit theft of fuel comprising, in combination:

a key operated relay connected in series with a power supply for the fuel pump apparatus and the fuel pump apparatus, said relay including barrel means defining a slot for receiving a key and having an axis, a key gripping member aligned generally transverse to the axis and translatable into and out of a position of engagement with the key comprising separate jaw members,

a contact switch located so as to be contacted by a key after insertion of that key into the slot, and a means for closing and opening the jaw members into engagement with a key in the slot, and

a remote switch means in series with said contact switch for causing said means to open the jaw members from the key.

4,367,828

LIQUID PACKAGING CONTAINER WITH POURING SPOUT AND AIR INLET

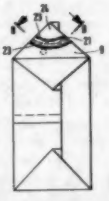
Wilhelm Reil, Bensheim-Auerbach, Fed. Rep. of Germany, assignor to Tetra Pak Developpement S.A., Pully, Switzerland

Filed Aug. 18, 1980, Ser. No. 179,331

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1979, 2939093

Int. Cl.³ B65D *47/10*

U.S. Cl. 222—528 **10 Claims**



1. A packaging container of cardboard, paper, or the like, for liquids, rendered impermeable by an internal coating of plastic, and having at least on one side, a double-thickness wall portion, the interior of which communicates with the interior of the container, said wall portion being provided with a strip of cardboard which can be gripped with the fingers, characterized in that said wall portion (8, 9) includes at least one score line (20, 21, 22) penetrating through only one of said double-thicknesses of said wall portion and along which said wall portion is severable upon lifting of said strip of cardboard with the fingers and, closely adjacent thereto, at least one weld-seam (23) by means of which said double-thickness is welded together in a fluid-tight manner.

4,367,829

UNIT FOR CARRYING CARGO AND/OR CHILD

John P. Kusz, 5536 N. Monitor, Chicago, Ill. 60630

Filed Jan. 16, 1981, Ser. No. 225,706

Int. Cl.³ B62J *1/28, 9/00*

U.S. Cl. 224—31 **26 Claims**

26. A combined child carrier and cargo container for mounting upon a cycle having wheels, comprising:

an open-topped container having a front end and a back end, a pair of downwardly extending side portions positioned on opposite sides of one of the cycle wheels, and a bridge portion disposed between and connecting said side portions and positioned above said cycle wheel,

a top member having a front end and a back end, said top member being movable between a first position in which said top member serves as a cover that overlies said container, and a second position in which said front end of said top member is inserted into said container, said top member in said second position serving as a seat for a child with the child's feet positioned within said downwardly extending side portions of said container.

4,367,830

MUSICAL INSTRUMENT SUPPORT

Douglas Jaquith, deceased, late of Yakima, Wash.; by Hope Jaquith, heiress, 13732 Hillhurst Dr. #24, Laguna Niguel, Calif. 92677; by Kent Jaquith, heir, Zillah, Wash., and by William Jaquith, heir, Laguna Niguel, Calif., assignors to Hope Jaquith, Laguna Niguel, Calif.

Filed Jul. 14, 1981, Ser. No. 283,165

Int. Cl.³ A44B *17/00*; C10D *3/00*

U.S. Cl. 224—258 **3 Claims**

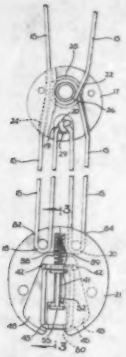
1. In a musical instrument support having a neck engaging loop member adapted to be worn around the neck of a human being, a cord coupled to each of two ends of said neck engaging loop member, and a clasp adapted to engage said cord, said clasp disposed at an end of said support opposite said neck engaging loop member, the improvement comprising:

a slide adapted to slidingly and frictionally engage said cord, said slide disposed intermediate the ends of said support;

said slide comprising a substantially round body portion having a first channel disposed within said slide, adapted to receive said cord coupled to one end of said neck engaging loop, a second channel disposed within said slide, adapted to receive said cord coupled to the other end of said neck engaging loop, an annular loop portion disposed intermediate said first channel and said second channel, and adjacent to each of said channels, a substantially cylindrical sleeve adjacent to and encircling an inner surface of said annular loop portion, a cavity disposed intermediate said first channel and said second channel, said cavity adapted to receive said cord and to retain a portion of said cord;

a clasp adapted to engage said cord, said clasp disposed at an end of said support opposite said neck engaging loop member;

said clasp comprising a body portion having a cutout defined on one end thereof, two retractable jaws, each of said jaws normally extending into said cutout from opposite sides thereof, a spring disposed within said body portion adapted to urge said jaws to extend into said cutout, a plunger disposed within said body portion adapted to compress said spring and urge said jaws to a retracted



position when a predetermined pressure is applied to said plunger in a direction opposite said cutout, said plunger having an end which extends into said cutout, which end has a predetermined extent;

whereby the length of said support is adjustable by the action of said slide and a musical instrument may be removably coupled to said clasp by the action of said jaws, said predetermined pressure applied to said plunger at said end of predetermined extent which extends into said cutout, and said spring.

4,367,831

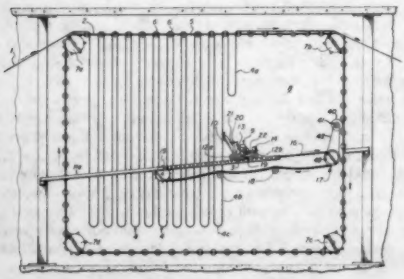
LOOPER

Emile Dubuc, 9141 Bayne, LaSalle (Quebec), Canada (H8R 26G); Maurice Bourgeois, 2315 Guindon St., St. Francois, Laval, Canada (H7R 2YH); Stanley May, 779 44th Ave., LaSalle (Quebec), Canada (H8T 2T7), and Robert Zoeller, 835 49th Ave., Lachine (Quebec), Canada

Continuation of Ser. No. 92,075, Nov. 5, 1979, abandoned. This application Nov. 17, 1981, Ser. No. 322,221

Int. Cl.³ B65H *25/00*

U.S. Cl. 226—14 **12 Claims**



1. In a looper apparatus used in the manufacture of asphalt impregnated roofing felt including a chamber, an endless driven belt movable through the chamber and including spaced tubular members adapted to carry hanging loops of asphalt impregnated felt between pairs thereof, a trolley rollably mounted on a track in the chamber and inclined toward the felt loops, and means extending from the trolley for contacting the foremost loop in the chamber under the influence of gravity acting upon the trolley located on the inclined track, the improvement comprising:

a driven chain mounted in said chamber and coupled to said endless driven belt for movement thereby at the same rate and in the same direction as said endless driven belt;

means, on said trolley, for releasably coupling said trolley to said driven chain; and

means, coupled to said means extending from said trolley for contacting the foremost loop in the chamber, for activating said means for releasably coupling said trolley to said driven chain to thereby move said trolley with said driven chain.

4,367,832

LOOP LIFTER

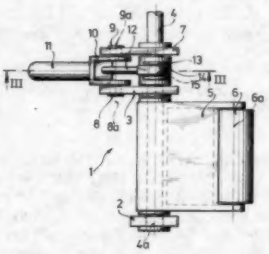
Wolfgang Fabian, Dortmund; Horst Heinen, Waltrop, and Theodor Sevenich, Dortmund, all of Fed. Rep. of Germany, assignors to Hoesch Werke Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 133,355

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1980, 2911881

Int. Cl.³ B65H *17/54;* **B21B** *39/20*

U.S. Cl. 226—108 **6 Claims**



1. A loop lifter for continuous strip-rolling mills in which the strip forms pendant loops, comprising: a support having a stationary abutment; an arm having a free end portion; a shaft rotatably supported by said support, said arm being connected to said shaft for pivotal movement about a substantially horizontal first axis so that the free end portion of the arm can bear from below against a respective loop and lift the same; spring means reacting between said arm and the stationary abutment for counter balancing the arm weight in all positions of action; said arm including a roll freely turnably journalled in said free end portion of said arm on a substantially horizontal second axis and engageable with the respective loop; a lever having a free end and mounted on said shaft for rotation therewith; said spring means reacting between the free end of said lever and the stationary abutment; said spring means having a pivot; the distance of said pivot from said first axis being equal to the length of said lever; said spring means including a cylindrical housing mounted on said pivot; a rod extending coaxially and slidably into said housing through one housing end thereof and having an inner end provided with an auxiliary abutment and an outer end connected to said lever, and a spring surrounding said rod and having opposite end portions bearing upon said auxiliary abutment and said one housing end, respectively; said one housing end being of bifurcated configuration.

4,367,833

TACKER

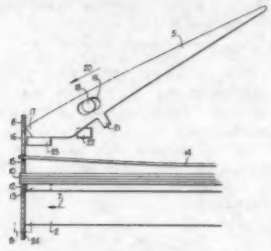
Alan G. Kenney, Over, England, assignor to Ofrex Group Limited, London, England

Filed Oct. 14, 1980, Ser. No. 197,011

Claims priority, application United Kingdom, Oct. 15, 1979, 7935722

Int. Cl.³ B25C 5/00, 7/00

U.S. Cl. 227—8 **4 Claims**



1. A stapler, said stapler comprising a magazine for containing staples to be ejected from the stapler and means for biassing said staples to one end of the magazine, means defining an ejection slot adjacent said end of the magazine, a striker movable in the ejection slot to eject said staples from the stapler, a first relatively strong spring for biassing the striker to the ejecting position said striker and said first spring being connected by a lost motion connection so as to permit relative movement between said striker and said first spring, said striker having follower means adapted to cooperate with a pawl, which pawl forms part of a pivoted handle assembly so that, when the pawl engages the said follower means, the handle can be operated to raise the striker against the bias of said first spring, said pawl then being disengaged from the follower means of the striker to permit the striker to move under the bias of said first spring to eject a staple from said guide slot, a second relatively weak spring means for biassing said striker following ejection of a staple to a rest position in which one end of the striker protrudes from said guide slot, said follower means of the striker then being spaced from the pawl so that the pawl cannot engage the said follower means, the arrangement being such that when the stapler is placed on a surface, the striker is moved back into the ejection slot against the bias of the second relatively weak spring means to bring the said follower means on the striker into alignment with the pawl so that the pawl can engage the said follower means on the striker.

4,367,834

TAG-ATTACHING GUN

Battista Lozio, Campione d'Italia, Italy, assignor to Battista Lozio & Figli S.P.A., Milan, Italy

Filed Feb. 20, 1981, Ser. No. 236,153

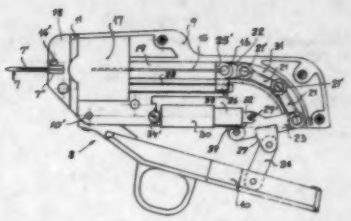
Claims priority, application Italy, Apr. 4, 1980, 21195 A/80

Int. Cl.³ B25C 1/00

U.S. Cl. 227—67 **10 Claims**

1. In a gun for the attachment of bar-lock tags to a penetrable article, comprising a body with a front end engaging a longitudinally slotted forwardly projecting needle, a barrel extending rearward from said front end, a plunger guided in said barrel in line with said needle, a trigger pivoted to said body for manual displacement between an idle position and a working position, and coupling means connecting said trigger with said plunger for advancing a tip of the latter in the slot of said needle upon movement into said working position for ejecting a bar-lock tag previously inserted into said slot,

the improvement wherein said barrel is open to one side and said plunger is laterally detachable from said coupling means, said body being provided with detachable cover means normally overlying said barrel at said one side, removal of said cover means enabling a lateral extraction



of said plunger from said barrel in the idle position of said trigger, said body being further provided with retaining means keeping said needle removably seated in said front end.

4,367,835

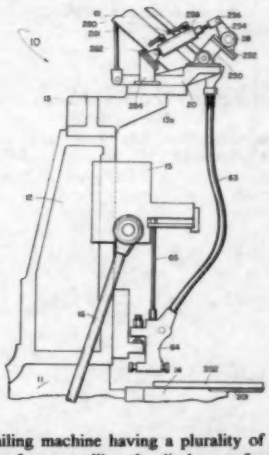
FEEDER FOR NAILING MACHINE

Ronald G. Stephenson, R.D. #1 Box 268, Hamburg, N.J. 07419

Filed Jun. 30, 1980, Ser. No. 164,045

Int. Cl.³ B27F 7/13

U.S. Cl. 227—109 **2 Claims**



1. In a nailing machine having a plurality of nail feeding means, means for controlling the discharge of nails from the nail feeding means, feed governing means associated with the controlling means at each of the nail feeding means, a work table for supporting a work piece to be nailed, means for driving nails advanced by the nail feed controlling means into the work piece supported on the work table, wherein the improvement comprises the nail discharge control means and the feed governing means including:

(a) a feed control drum bar rotatably mounted on the nail machine;

(b) programmer means for generating a plurality of control signals for sequencing the nail machine through various work steps comprising a complete work cycle;

(c) means for rotating said feed control drum bar back and forth between a first and second position only in response to predetermined ones of said control signals; and,

(d) means fixedly disposed on said feed control bar for controlling the dispensing of nails from the nail feeding means

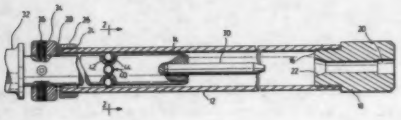
at each of said first and second positions in accordance with first and second predetermined patterns.

4,367,836

NAIL DRIVER

Ivan E. Hodson, 99 Marlborough Ave., Toronto, Ontario, Canada (M5R 1X6)

Filed Aug. 4, 1980, Ser. No. 174,763
Claims priority, application Canada, Aug. 24, 1979, 334528
Int. Cl.³ B25C *1/02*
U.S. Cl. 227—142 15 Claims



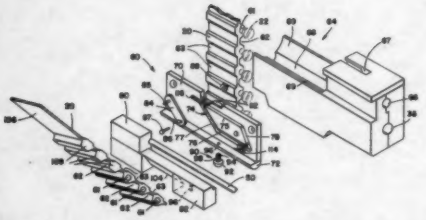
1. In a nail driver comprising an elongated tube, an elongated ram mounted for reciprocal movement in said tube, said ram having a first end and an opposite end thereto having a handle means therefor, the improvement wherein the radial dimension of said ram is substantially less than that of the tube, so as to provide a substantial clearance between the radial wall of said ram along the length thereof and the interior wall of said tube, and wherein low friction spacing means is provided adjacent said first end of said ram, said low friction spacing means being dimensioned and located so as to substantially preclude lateral displacement of said first end of said ram with respect to said tube and comprising a plurality of rolling surfaces.

4,367,837

TAPE MAGAZINE FEED APPARATUS FOR HEAD DRIVEN FASTENERS

Anthony P. Manino, 1185 J Chess Dr., Foster City, Calif. 94404

Filed Apr. 25, 1980, Ser. No. 143,887
Int. Cl.³ B65H *17/40*
U.S. Cl. 227—136 6 Claims



1. In a driving tool for driving fasteners into workpieces from a flexible tape having a plurality of equally spaced grooves extending transversely across one surface thereof with a plurality of said fasteners distributed along one side of said tape and extending transversely of said tape, said driving tool comprising a foot member, a driving channel extending through said foot member to an open end, a drive rod movable back and forth in the axial direction of said driving channel adapted to engage a fastener in said driving channel and move said fastener through a portion of said driving channel and out of said open end thereof, a feed channel of generally rectangular cross-section extending through said foot member transversely of and tangential to said portion of said driving channel, an elongated opening communicating between said feed channel and said drive channel with its axis of elongation extending parallel to the axis of said drive channel, said elongated opening and the cross-section of the first portion of said feed channel from one end thereof to said elongated opening having their long dimensions greater than the length of said fasteners and their short dimensions greater than the width of said fasteners, said feed channel having cross-sectional dimensions adapted to pass said tape throughout; the improvement comprising:

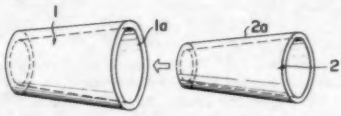
positioning said first portion of said feed channel with respect to the remainder of said feed channel to form an included angle therebetween on the opposite side thereof from said driving channel which is less than one hundred degrees with the vertex of said angle tangential to said driving channel and said elongated opening extending along said vertex of said angle.

4,367,838

METHOD OF PRODUCING CLAD STEEL ARTICLES

Toshio Yoshida, Kobe, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Aug. 14, 1980, Ser. No. 178,347
Claims priority, application Japan, Sep. 20, 1979, 54-120127
Int. Cl.³ B23K *20/12*
U.S. Cl. 228—112 6 Claims



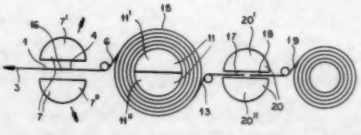
1. An improved method of producing clad steel articles which comprises placing a dissimilar metal material in a laminated state against a steel material, having mutual contact along respective frustoconical faying surfaces, and friction welding the metal materials by relative rotation at their faying surfaces to cause bonding of said metal materials together, the improvement comprising the steps of: forming one of the metal materials to be friction welded as an outer tube, having an inner wall surface finished to be the frustoconical faying surface thereof, forming the other metal material as an inner tube having an outer surface finished to mate with said frustoconical faying surface, producing by said friction welding a bonded metal blank an subjecting said metal blank to plastic working to produce a clad steel article.

4,367,839

METHOD AND APPARATUS FOR THE PRODUCTION OF METAL STRIPS OF INDEFINITE LENGTH FROM ROLLED-STRIP SECTIONS

Klaus Angerer, Weiherstrasse 7, 8551 Röttenbach, Fed. Rep. of Germany

Filed Aug. 22, 1980, Ser. No. 181,157
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1979, 2934115
Int. Cl.³ B23K *28/02;* B21C *49/00;* B21B *41/00*
U.S. Cl. 228—155 7 Claims



1. A method of producing a metal strip of indefinite length from a plurality of limited-length rolled-strip sections joined to one another end-to-end, comprising the steps of:

(a) welding a trailing end of a first strip section to a confronting leading end of a second strip section;

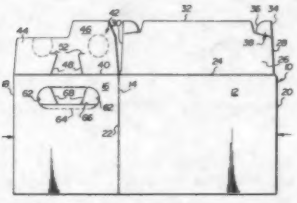
(b) clamping the welded ends of said first and second strip sections between halves of a first reel;
(c) unidirectionally rotating said first reel to wind said first and second strip sections into a first double-layer coil thereon;
(d) welding a trailing end of said strip section to a leading end of a third strip section;
(e) clamping the welded ends of said second and third strip sections between halves of a second reel disposed upstream of said first reel;
(f) unidirectionally rotating said second reel while simultaneously rotating said first reel in a direction opposite that of step (c) for unwinding said first and second strip sections therefrom, said first strip section being fed forward while said second strip section is fed back for joint winding with said third strip section into a second double-layer coil on said second reel;
(g) welding a trailing end of said third strip section to a leading end of a fourth strip section;
(h) unclamping the welded ends of said first and second strip sections from said first reel; and
(i) rotating said second reel in a direction opposite that of step (f) for unwinding said second and third strip sections therefrom.

4,367,840

CONTAINER

Richard D. McFadden, London, Canada, assignor to Labatt Brewing Company Limited, London, Canada

Continuation-in-part of Ser. No. 134,079, Mar. 26, 1980, abandoned. This application Nov. 6, 1981, Ser. No. 318,700
Int. Cl.³ B65D *5/10, 5/66*
U.S. Cl. 229—39 R **9 Claims**



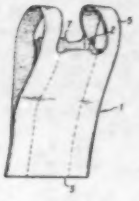
1. A container comprising a base, end and side walls connected by hinge lines to one another; opposing pairs of end and side panels connected by hinge lines to the upper edges of respective end and side walls and extending substantially the length thereof, each end and side panel being adapted to fold toward its opposing respective end or side panel, said side panels being further adapted to overlie said end panels and co-act therewith to form the top wall with the longitudinal edges of said side panels substantially abutting; one of said end panels being provided with a pair of inwardly convergent slots closely straddling the centerline of said end panel, each said slot being oriented at an angle to the hinge line between said end panel and respective end wall; said end panel being further provided with a slit joined to the inner extremity of said slot and extending a very short distance toward the closest side wall and substantially parallel to said end wall hinge line; a pair of tabs, each tab disposed in the area of its respective side panel adapted to overlie said end panel containing said slots, said tabs being adapted to bend out of the plane of its respective side panel and enter said slots such that the tabs extend partially under a portion of the end panel between said slots thereby providing a strong frictional engagement at least a portion of an edge of said slits, whereby said side and end panels are mechanically secured together.

4,367,841

THERMOPLASTIC CARRYING BAG WITH BINARY POLYOLEFIN RESIN BLEND

Ranjit Mazumdar, Fairport, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 18, 1980, Ser. No. 208,091
Int. Cl.³ B65D *33/00;* **B32B** *27/08*
U.S. Cl. 229—54 R **6 Claims**



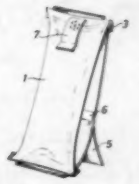
1. An undershirt-type handle strap carrying bag formed of a thin polyolefin film consisting of a homogeneous binary blend of hydrocarbon resins, said resin blend containing:
a. 10 to 40 wt. % linear low density copolymer of ethylene with 1 to 10 wt. % alpha-olefin having 4 to 8 carbon atoms, and having a melt index of 0.2 to 2; and
b. 60 to 90 wt. % highly branched low density ethylene homopolymer having a fractional melt index of 0.5 to 0.9.

4,367,842

PACKING CONTAINER FOR PRESSURIZED CONTENTS

Hans Rausing, Lund, Sweden, assignor to Tetra Pak International AB, Sweden

Filed Nov. 20, 1980, Ser. No. 208,834
Claims priority, application Sweden, Nov. 30, 1979, 7909884
Int. Cl.³ B65D *33/02*
U.S. Cl. 229—55 **14 Claims**

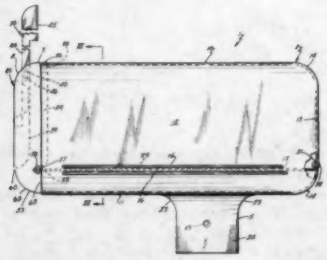


1. A packing container for pressurized contents, comprising:
a tubular container body;
a transverse sealing fin disposed at each end of said container body to seal said container body, said sealing fin having inside surfaces of said body sealed together; and
a strengthening band, lying outside said container body disposed only on one side of said container body and secured only to said sealing fins, said sealing fins being folded down against said container body on said one side, and said band being sealed to said fins whereby said band holds said sealing fins folded down against said container body to take up axial tensile stresses on said sealing fins caused by internal pressure in said container body and to prevent the pressurized contents from leaking out through said sealing fins.

4,367,843
ANIMAL PROD
Daniel M. Bros, Edina; William G. Bartel, Wayzata, and LaVerne M. Larsen, Edina, all of Minn., assignors to Hot-Shot Products Co., Savage, Minn.
Filed Mar. 3, 1980, Ser. No. 126,946
Int. Cl.³ B68B 11/00; F41B 15/04
U.S. Cl. 231—2 E 13 Claims

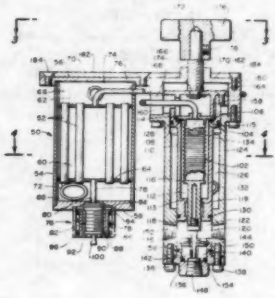
1. An animal prod comprising:
a case having a plurality of bores;
a plurality of electrically conductive rod electrodes each having a base and side and being mounted inside said bores and projecting from said case for delivering electrical stimulus shocks to the body of an animal;
electrically circuitry contained inside said case and electrically connected to said rod electrodes for providing said rod electrodes with electrical stimulus shock signals;
a restraint means mounted inside said case for retaining one of said rod electrodes inside one of said bores, wherein said restraint means comprises:
a first member; and
a second member interacting with the base of said rod electrode to trap said rod electrode between said first member engaging the side of said rod electrode and said second member so that said rod electrode is prevented from moving along said bore.

4,367,844
MAILBOX
Donald J. Drummond, A6351 - 143rd Ave., Holland, Mich. 49423
Filed Aug. 14, 1980, Ser. No. 178,181
Int. Cl.³ B65D 91/00
U.S. Cl. 232—17 17 Claims



1. A mailbox, comprising:
a hollow, closed molded body having an open end through which mail and the like is inserted and withdrawn from said body, said body further including a top wall, a bottom wall and side walls, and closing means secured to said body for selectively closing and sealing said open end; and
a rigid mounting sleeve extending perpendicularly from one of said walls of said body and being formed integrally and in one piece with said body, said mounting sleeve defining an aperture shaped to telescopically receive a mailbox support post therein and further including means for connecting said sleeve to the post to securely support said mailbox and its contents at a selected location above the ground, said body having smooth rounded edges and corners and said mounting sleeve having a noncircular lateral cross-sectional shape for preventing rotation of said mailbox on said support post, said body and said sleeve are molded as a single part from a synthetic resin material, and wherein:
said mounting sleeve depends from and opens through said bottom wall of said body at a substantially perpendicular relationship thereto.

4,367,845
AUTOMATIC TEMPERATURE CONTROL SYSTEM FOR DIVER HEATING SYSTEM
Sergius S. Sergev, Ventura, and Theodore J. Roster, Oxnard, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Division of Ser. No. 143,079, Apr. 24, 1980, Pat. No. 4,295,604.
This application Jul. 29, 1981, Ser. No. 288,247
Int. Cl.³ F23N 5/06
U.S. Cl. 236—21 R 3 Claims



1. A thermally controlled gas flow valve in which the gas flow through said valve is a function of the temperature of a first fluid comprising:
seat means having an orifice therethrough, a gas being fed under pressure into one end of said orifice;
means for transferring heat between the first fluid and a second fluid having a high coefficient of thermal expansion, including:
a reservoir filled with said second fluid; and
a plurality of tubes disposed within said reservoir, said plurality of tubes being coupled to receive said first fluid so that said first fluid passes through said tubes, said first and second fluid being in thermal contact with each other through said tubes so that heat may be transferred between said fluids;
means for opening or closing said orifice through which gas may flow as a function of the volume of the second fluid, including;
expansion bellows means communicating with said reservoir to receive said second fluid so that an increase or decrease in the volume of said second fluid produces an expansion or contraction, respectively, of said bellows means along its longitudinal axis, and
a plug coupled to said bellows means so that expansion and contraction of said bellows means moves said plug to open or close said orifice for varying the cross-sectional area of the passageway therethrough, thereby controlling the gas flow through said orifice;
a valve body having a cavity, said expansion bellows and

seat means being disposed therein; the cavity communicating with said orifice so that the gas passing through said orifice may flow to surround said bellows means in said cavity;

means for protecting said expansion bellows means from over pressure due to expansion of said second fluid; said means for protecting said expansion bellows from over pressure due to expansion of said second fluid including:

a housing having an inwardly directed shoulder;

second bellows means communicating with said reservoir for receiving said second fluid and disposed in said housing;

a pressure plate disposed between said housing and said second bellows, said pressure plate having an inwardly directed shoulder extending over the movable end of said second bellows and an outwardly directed shoulder on the other end, a cavity being formed between said pressure plate and said housing; and

a spring disposed in said cavity between said pressure plate and said housing, whereby expanding of the second bellows acts against the spring force between the pressure plate and the housing.

4,367,846

FUEL INJECTION VALVE ASSEMBLY FOR INTERNAL COMBUSTION ENGINES

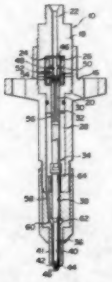
Jiro Akagi, Oyama, Japan, assignor to Kawasaki Steel Corporation, Kobe, Japan

Filed Dec. 19, 1980, Ser. No. 218,430

Claims priority, application Japan, Dec. 25, 1979, 54-178650; Dec. 25, 1979, 54-178652

Int. Cl.³ F02M *47/02*

U.S. Cl. 239—96 **9 Claims**



1. A fuel injection valve assembly for an internal combustion engine, comprising:

(a) a body having formed therein:

(1) a fuel inlet for admitting successive charges of pressurized fuel;

(2) a spring chamber in constant communication with the fuel inlet;

(3) a storage chamber for storing each incoming charge of pressurized fuel; and

(4) a fuel outlet for discharging in the form of droplets the pressurized fuel fed from the storage chamber;

(b) spring means in the spring chamber,

(c) needle valve means mounted within the body for reciprocable motion between a first and a second position and extending between the spring chamber and the fuel outlet through the storage chamber and normally held under the bias of the spring means in the first position to close the fuel outlet, the needle valve means having:

(1) an inlet passageway for the introduction of the pressurized fuel from the fuel inlet into the storage chamber; and

(2) means adapted to be acted upon at least by the pressurized fuel stored in the storage chamber, the needle valve means when so acted upon being moved from the first to the second position against the bias of the spring means for opening the fuel outlet; and

(d) a check valve for blocking the inlet passageway after each charge of pressurized fuel is introduced into the storage chamber from the fuel inlet.

4,367,847

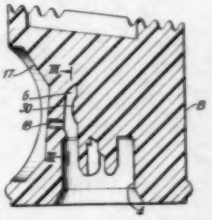
ONE-PIECE MECHANICAL BREAK UP (MBU)

Christian Bayer, Armonk, N.Y., assignor to Precision Valve Corporation, Yonkers, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,994

Int. Cl.³ B05B *1/34*

U.S. Cl. 239—337 **6 Claims**



1. In a one-piece integral molded valve actuator for a pressurized aerosol dispenser, said actuator having means to mount the actuator on the valve of the dispenser in communication with the product discharge passage of the valve, a generally circular swirl chamber molded within the actuator, a passage molded within the actuator in communication with the valve discharge passage and extending to an entrance aperture of the swirl chamber, the entrance aperture being located to introduce product circumferentially of the swirl chamber, the swirl chamber having a front wall with a discharge orifice extending from the front wall of the swirl chamber to the front exterior of the actuator, and a rear wall normal to the central axis of the swirl chamber, the improvement which comprises a sloped mound on the rear wall protruding into the swirl chamber centrally thereof, and the discharge orifice being located off-center of the swirl chamber axis and remote from the entrance aperture.

4,367,848

SPREADER

Richard J. Ehmke, and Arthur Linsenmeyer, both of Beatrice, Nebr., assignors to Dempster Industries, Inc., Beatrice, Nebr.

Filed Aug. 7, 1981, Ser. No. 290,946

Int. Cl.³ A01C *17/00*

U.S. Cl. 239—665 **10 Claims**

1. Adjustable vane rear chute for use with a spinner disc including a conical spinner axially driven behind and below of feedgate and longitudinal conveyor chain running longitudinally of a geometrically configured hopper of a dry material spreader, said chute comprising;

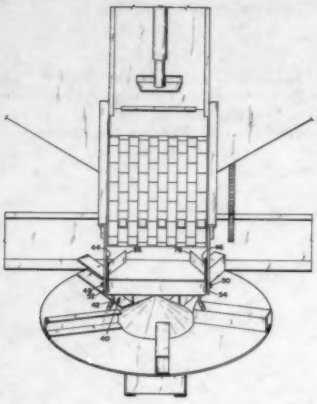
a. configured means including a base, left side and right side members affixed to said base, two opposing holes in said base, and two pluralities of holes positioned in a rearward portion of said base on opposing geometrical arcs;

b. two geometrically configured handle rods, each rod including a vertical axial member extending up through each of said opposing holes and including means in a rearward horizontal portion for engaging into one of said holes of each of said geometrical arc;

c. longitudinal directional control vanes affixed to each of said axial member for positioning at an angle with respect to an end of said chute for directing dry material coming

down thereto to a precise position over said conical spinner of said spinner disc;

d. means axially supporting said end of said axial extending member of said rod to said side of said configured means; and,



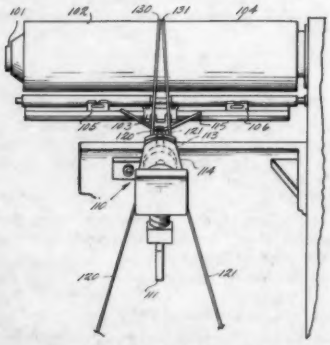
e. means securing configured means to a rear of said spreader whereby said vanes are adjustable by said rods subsequently secured in position by said engaging means into said holes on said geometrical arcs for directing dry material to said conical spinner of said spinner drive, thereby optimizing and equalizing distribution pattern of said dry material.

4,367,849

PNEUMATIC TRANSFER MECHANISM FOR FORMING YARN TAIL ENDS

Enek E. Irby, Altavista, Va., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Mar. 17, 1981, Ser. No. 244,592
Int. Cl.³ B65H *54/02, 54/20*
U.S. Cl. 242—18 PW **5 Claims**



1. An apparatus for simultaneously winding yarn on multiple winding tubes comprising:

(a) means for rotatably mounting at least two abutting winding tubes,

(b) means for rotating said winding tubes,

(c) means for feeding at least one yarn strand to each of said winding tubes,

(d) fixed yarn holding means for holding the yarn strands adjacent the abutting ends of said winding tubes,

(e) reciprocating guide means associated with said mounting means for moving the yarn strands back and forth across said winding tubes to form yarn packages, said reciprocating guide means located between said winding tubes and said yarn holding means,

(f) and movable transfer means comprising,

a rod having two free ends bent at about its midpoint so that each end lies closer to said reciprocating guide means than its midpoint, and

drive means for moving said rod in a fixed plane from a first position to a second position whereby in said first position said rod is located between said yarn holding means and said winding tubes and in said second position said yarn holding means is located between said winding tubes and said rod, and

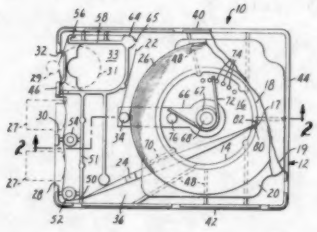
wherein during the course of movement from said first to said second position each of said free ends of said rod engages at least one yarn strand and disengages said strand from said yarn holding means whereby said strands are moved away from each other and are directed into the paths of said reciprocating guide means.

4,367,850

ENDLESS LOOP TAPE CARTRIDGE

Alfred H. Moris, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Filed Dec. 8, 1980, Ser. No. 214,042
Int. Cl.³ G11B *23/06*
U.S. Cl. 242—55.19 A **7 Claims**



1. A cartridge comprising:

a housing adapted to be received in a machine and having access openings adapted to receive heads and a tape drive mechanism in said machine;

a hub fixed on said housing at a position spaced from said access openings, said hub having a generally cylindrical peripheral surface fixed with respect to said housing, a central opening, and a slot extending axially across the full width of the hub opening through said peripheral surface and communicating with said central opening;

an endless length of magnetic tape having a major portion wrapped about said peripheral surface to form a coil and a minor portion extending from the innermost wrap of the coil through said slot into said central opening, and around the side surface of the coil to the outermost wrap of the coil; and

means on said housing for defining a tape path for and producing tension in said minor portion, comprising means for guiding said minor portion in a free path past said access openings in a predetermined position for engagement by the heads and drive mechanism of the machine, a guide pin guiding said minor portion between said access openings and the outermost wrap of said coil, means mounting said guide pin for movement along a path adjacent to the periphery of the coil in a direction generally transverse to a normal tape path between the access openings and the coil between a first position providing a first path length between said access openings and said coil and a second position providing a second path length longer

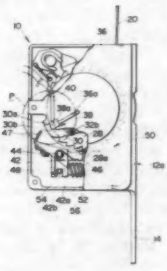
than said first path length between said access openings and said coil, and means for biasing said guide pin toward said second position with a low force to provide a low tension in the outermost wrap of the coil about said peripheral surface so that with the tape drive mechanism of a said machine engaged with the minor portion of the tape between the slot and the guide pin, the low tension in the outermost wrap of the coil produces a significantly higher tension in the tape between the innermost wrap of the coil and the drive mechanism that is sufficient to press the tape guided across the openings against the heads in the machine, and said guide pin will move and maintain generally a uniform low tension in the outermost wrap and thus maintain generally a uniform relatively high tension in the tape guided across the heads in response to changes in length in the minor portion of the tape during operation of the cartridge.

4,367,851

SEAT BELT RETRACTOR WITH A TENSION ELIMINATOR

Kouzou Maeda, Yokohama, and Ken Kamijo, Yokosuka, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 9, 1981, Ser. No. 232,500
Claims priority, application Japan, Feb. 8, 1980, 55-14582
Int. Cl.³ A62B *35/02*; B65H *75/48*
U.S. Cl. 242—107.7 **9 Claims**



1. A seat belt retractor having a tension eliminator, comprising:

a belt take up reel on which a seat belt is wound, said reel being biased to rotate in a direction to retract thereon said belt;

a belt measuring wheel which is rotatable with said reel about the axis of said reel;

slide means movable in response to the rotation of said belt measuring wheel;

first signal producing means for producing a signal when said slide means takes a predetermined position;

second signal producing means for producing a signal when said belt takes an operative position to restrain the seated occupant;

blocker means having an operative position for preventing rotation of said reel in the direction to retract said belt in response to receiving both the signals produced by said first and second signal producing means, and an inoperative position allowing free rotation of said reel;

stopping means for stopping the rotation of said belt measuring wheel in the same direction as that of said reel to withdraw the belt when said slide means takes said predetermined position and said blocker means takes said inoperative position; and

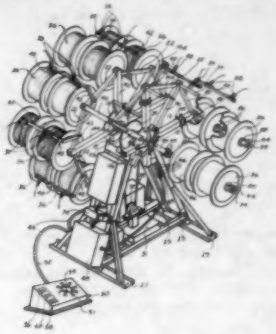
obstruction means for preventing said blocker means from taking said operative position when said belt measuring wheel is in a predetermined angular range.

4,367,852

POWERED WIRE SPOOL HOLDING AND POSITIONING APPARATUS

Luis J. Lazaro, Jr., Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 29, 1980, Ser. No. 221,313
Int. Cl.³ B65H *49/00*
U.S. Cl. 242—129.72 **9 Claims**



1. Apparatus for selectively positioning spools containing wire so as to place said wire in a presentment position for removal of said wire from said spools comprising:

base means;

rack means rotatably mounted on said base means;

a plurality of spool receiving means associated with said rack means for receiving said spools;

position-monitoring means associated with said rack means for producing a first signal indicative of rack position;

position selection means operable to produce a second signal indicative of a desired rack position;

comparison means for receiving said first signal and said second signal, said comparison means producing a third signal upon said rack position coinciding with said desired position;

motor means associated with said rack and said position selection means to drive said rack; and

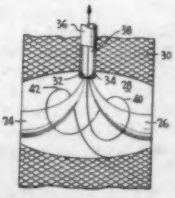
motor controller means associated with said motor means, said motor controller means being responsive to said third signal to stop the motion of said rack upon reception of said third signal.

4,367,853

GUIDE AND SUPPORT MEMBERS FOR UNWINDING FLEXIBLE MATERIAL FROM A WOUND PACKAGE

Frank W. Kotzur, Mahopac, N.Y., assignor to Windings, Inc., Goldens Bridge, N.Y.

Filed Dec. 7, 1981, Ser. No. 328,224
Int. Cl.³ B65H *55/02*
U.S. Cl. 242—163 **5 Claims**



1. A package of flexible material comprising a plurality of layers each formed of a plurality of figure-8 winds with the crossovers of the winds progressing around the package, said

package having a radial opening therein, and having an axial opening into which said radial opening extends, and the free inner end of said flexible material being let out through said radial opening, said package further including a pair of inwardly tapering members extending into said axial opening and each tapering member including an end portion positioned closely adjacent and pointed towards the inner opening of said radial opening so as to guide loops of material withdrawn from the package for payout through said radial opening.

4,367,854

TAPE CASSETTE

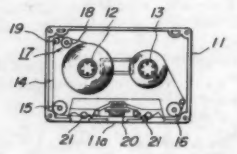
Sinichi Saitou, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Jun. 18, 1980, Ser. No. 160,669

Claims priority, application Japan, Jun. 18, 1979, 54-83184[U]; Jun. 18, 1979, 54-83185[U]

Int. Cl.³ G03B *1/04;* G11B *15/32*

U.S. Cl. 242—198 **1 Claim**



1. A tape cassette comprising:

a generally quadrilateral cassette body formed with four corners having a head inserting window portion on a first side thereof;

a pair of tape hubs arranged in said body;

a magnetic tape wound around said hubs and fed from one of said hubs to the other of said hubs;

a pair of turning rollers each located respectively at a first and a second of said four corners of said cassette body for guiding said tape between said turning rollers along a path extending generally parallel to said first side of said cassette body past said window portion, said first and said second corners being located at opposite ends of said first side; and

a tape guide portion located at a third of said four corners at the end of a second side of said cassette opposite said first side and generally parallel thereto;

said tape being wound to extend from one of said tape hubs directly to and about said guide portion and from said guide portion to one of said turning rollers parallel to a third side of said cassette body which extends perpendicularly to said first and second sides thereof between said guide portion and said one turning roller;

said tape guide portion consisting essentially of a rotating roller guide member and a fixed guide member adapted to direct said tape from said one hub so as to guide the running direction of said tape by operation of said fixed guide member and said rotating roller guide member, said rotating roller guide member being arranged to receive said tape directly from said one hub, said roller guide member being thereby located between said fixed guide member and said one tape hub taken in the running direction of said tape.

4,367,855

APPARATUS FOR THE EXCISION AND REMOVAL OF BLOCKS OF SILAGE

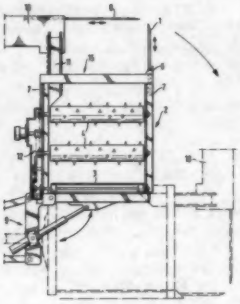
Hans von der Heide, Ibbenbürener Str. 17, 4533 Laggenbeck, Fed. Rep. of Germany

Filed Feb. 17, 1981, Ser. No. 234,528

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1980, 3006881

Int. Cl.³ B02C *18/02*

U.S. Cl. 241—283 **3 Claims**



1. An apparatus for the excision and removal of blocks of silage from a stock of silage, comprising: a frame; prongs fastened to the frame; a knife; means for moving the knife on a U-shaped path at a distance above a plane through the prongs corresponding approximately to the length of the knife; a feed container disposed on the frame behind the prongs and having an open front side, means for forming the rear wall thereof as a scraper flight conveyor, and a lateral opening for dispensing the silage; and means for pivoting the feed container and frame about 90 degrees from a position wherein the open side is vertical to a position wherein the rear wall scraper flight conveyor means forms the bottom of the feed container to effect the input of silage into the feed container and the subsequent output of the silage through the lateral opening.

4,367,856

REEL SHAFT BRAKING DEVICE OF MAGNETIC RECORDING TAPE RUNNING APPARATUS

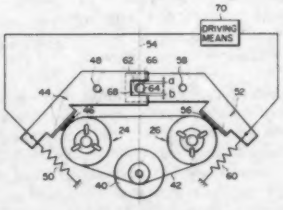
Shiro Kondo, Chofu, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 1, 1981, Ser. No. 259,562

Claims priority, application Japan, May 9, 1980, 55-63622[U]

Int. Cl.³ G03B *1/04;* G11B *15/32*

U.S. Cl. 242—204 **3 Claims**



1. A reel shaft braking device used in a magnetic recording tape running apparatus with a pair of reel shafts, comprising:

a first lever pivotally mounted at the middle portion thereof so as to be able to rock within a plane intersecting the axis of rotation of one of said pair of reel shafts between a first position where one end portion of said first lever abuts

against said one reel shaft to be frictionally engaged therewith and a second position where said one end portion is separated from said one reel shaft, the other end portion of said first lever having an opening provided with a pair of edges which extend along a direction to intersect the movement locus of said other end portion and are spaced from each other;

a second lever pivotally mounted at the middle portion thereof so as to be able to rock within a plane intersecting the axis of rotation of the other of said pair of reel shafts between a first position where one end portion of said second lever abuts against said other reel shaft to be frictionally engaged therewith and a second position where said one end portion thereof is separated from said other reel shaft;

a projection fixed to the other end portion of said second lever, said projection being separated from said pair of edges of said first lever when said first and second levers are located in their respective first positions, and abutting against one of said pair of edges to locate said second lever in said second position thereof when said first lever is located in said second position thereof, and abutting against the other of said pair of edges to locate said first lever in said second position thereof when said second lever is located in said second position thereof;

urging means for urging said first and second levers toward their respective first positions; and

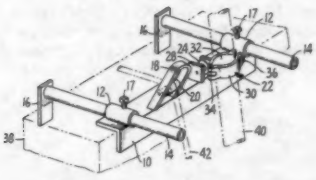
driving means for shifting said second lever from said first position to said second position thereof by shifting said first lever from said first position to said second position thereof when said one reel shaft serves as a take-up reel shaft, and for shifting said first lever from said first position to said second position thereof by shifting said second lever from said first position to said second position thereof when said other reel shaft serves as the take-up reel shaft.

4,367,857

ADJUSTABLE HOT PIPE BRACKET

Bartholomew J. McCarthy, Redwood City, Calif., assignor to Cleasby Manufacturing Co., Inc., San Francisco, Calif.

Filed Dec. 29, 1980, Ser. No. 220,838
Int. Cl.³ F16L 3/08
U.S. Cl. 248—74 R **2 Claims**



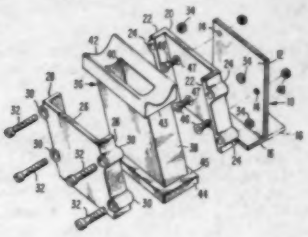
1. A mounting bracket for connecting hot tar pipes to building parapets comprising an elongated unitary angle member to be disposed in direct clamping relation to the upper and outer side of a parapet, said member having outer end portions and an intermediate portion, a pair of sleeve members positioned above and fixedly attached to the angle member and extending transversely thereof at said outer end portions, a pair of tubular members slidably disposed in said sleeve members, said tubular members having at their inner or roof-adjacent ends flange elements to be disposed in clamping relation to the inner side of said parapet, a pipe clamp connected to the intermediate portion of said angle member, said clamp being positionable outwardly of said angle member and said parapet and having a universal pivot connection with said angle member, and means to adjustably and releasably connect said tubular members in fixed relation with said sleeve members.

4,367,858

NOZZLE BRACKET MOUNT

Theodore Ziayick, Jr., 140 Riverview Dr., Yardley, Pa. 19067

Filed Dec. 4, 1980, Ser. No. 213,141
Int. Cl.³ B05B 15/06
U.S. Cl. 248—75 **10 Claims**



1. A support for a hose nozzle having a pistol-grip handle, comprising:

(a) first and second, confronting retainer plates;

(b) means extending between and connecting said plates for adjustment toward and away from each other; and

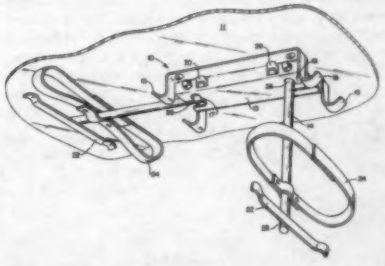
(c) a socket having a bore adapted to receive a pistol-grip handle of a hose nozzle, said socket being adapted for compression between the retaining plates when the plates are drawn toward each other, whereby to reduce the transverse dimension of the bore, thus to accommodate the bore to receiving pistol-grip handles of differing widths, said socket being formed at one end with a saddle adapted to supportably receive the body of said nozzle in a position in which the pistol-grip handle of the nozzle extends into the bore of the socket.

4,367,859

CEILING-MOUNTED HOLDER FOR INTRAVENOUS FLUID RECEPTACLES

David M. Lamon, Columbus, Ohio, assignor to The Horton Company, Columbus, Ohio

Filed Jul. 14, 1980, Ser. No. 167,940
Int. Cl.³ A47H 1/10
U.S. Cl. 248—318 **3 Claims**



1. A ceiling-mounted holder for intravenous (I.V.) fluid receptacles, said holder comprising:

(a) a relatively shallow, box-like supporting frame for rigid attachment to a ceiling and including:

(i) hook means for supporting an I.V. receptacle, and

(ii) a generally L-shaped guide slot opening at one end of said frame and defining thereon an arm-locking detent;

(b) a receptacle-stabilizing arm pivotally connected to said frame for swinging movement between an "up" position substantially flush with the ceiling and a "down" position

depending from the ceiling; a portion of said arm being movable within the guide slot of said frame as said arm swings between its "up" and "down" positions;

(c) spring means carried by said frame and arranged normally to bias said arm laterally into engagement with the locking detent of said frame when said arm occupies either its "up" or "down" positions to thereby hold said arm against swinging movement; and

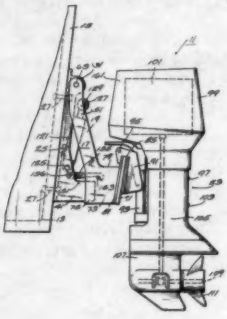
(d) manually operable lever means carried by said frame and operable to disengage said arm from said detent and thereby free said arm for swinging movement.

4,367,860

HIGH PIVOT TRANSOM BRACKET ASSEMBLY FOR MOUNTING OUTBOARD MOTOR

Charles D. Strang, Lake Forest, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Sep. 25, 1980, Ser. No. 190,589
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—641 **11 Claims**



1. A bracket assembly for supporting an outboard motor from a boat transom so as to permit tilting of the outboard motor substantially wholly in the area aft of the transom, said bracket assembly comprising a transom bracket adapted to be fixed to the boat transom and including an upper end having a bore which is horizontal when said transom bracket is boat mounted, and a lower part projecting rearwardly and including spaced vertically extending side walls, a tilt pin extending in said bore, and a tilt member including an upper end having a bore receiving said tilt pin, and a lower part having a transverse cross section of U-shape which is adapted to be located in telescopic relation to said rearwardly projecting lower part of said transom bracket and which includes laterally spaced side walls positioned in laterally adjacent relation to said transom bracket side walls and a rearwardly located outer end, and an outboard motor mounting member fixed to said outer end of said lower part, extending generally vertically, and located substantially below said tilt pin and substantially rearwardly of said tilt pin.

4,367,861

INSTALLATION CONTROL VALVES

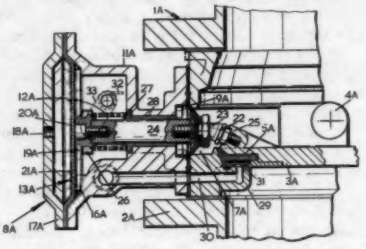
Geddes A. Bray, Moston, and Richard J. Holker, Marple, both of England, assignors to Mather & Platt Limited, Manchester, England

Continuation of Ser. No. 916,692, Jun. 19, 1978, abandoned. This application Sep. 11, 1980, Ser. No. 186,044
Claims priority, application United Kingdom, Jul. 14, 1978, 29595/77
Int. Cl.³ F16K *31/126*
U.S. Cl. 251—61 **18 Claims**

1. An installation control valve comprising:

(a) a valve body for disposition in fire extinguishing installation pipework downstream of a pressurized source of extinguishant;

(b) a butterfly valve disc within said valve body and normally retained closed to prevent the flow of extinguishant through the installation pipework, said valve disc being fixedly rotatably mounted within said valve body about an axis of rotation, that is off-set longitudinally of the point of intersection of a plane in which the periphery of said valve disc lies and a longitudinal axis of said disc normal to said plane by a distance sufficiently great that said valve disc will open with a slight pressure differential thereon and will close upon cessation of fluid flow, and said axis of rotation being parallel to said plane in all positions of said valve disc;



(c) a movable stop cooperable with said butterfly valve disc and which in one position abuts said valve disc to retain said valve closed against pressure forces acting thereon and which in a second position frees said valve disc for pivotal movement; and

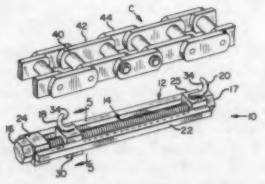
(d) a retaining mechanism which is releasably held to resist stop movement and prevent said valve disc from opening, and which is operable under a predetermined condition to permit stop movement from said one position to said second position whereby unequal pressure forces on either side of the said off-set axis on one side of the valve disc can cause valve opening.

4,367,862

ROLLER CHAIN-CONNECTING TOOL

Robert I. McGregor, Chemainus, Canada, assignor to Nordic Diving Salvage & Marine Contractors Ltd., British Columbia, Canada

Filed Mar. 3, 1981, Ser. No. 240,027
Int. Cl.³ B66F *3/08*
U.S. Cl. 254—231 **8 Claims**



1. A chain-connecting tool for pulling the opposite ends of a chain toward one another for interconnection, the tool comprising:

an elongated body having spaced ends;

a threaded rod mounted for axial rotation in the body, the rod having end portions journaled in and extending through each end of the body and rigidly supported thereby;

rotating means for rotating said rod independently of the body;

a pair of chain-engaging means for engaging said chain ends; and

mounting means threadedly mounting at least one of the pair of chain-engaging means on the rod for movement therealong toward the other chain-engaging means when the rotating means is actuated to rotate the rod for pulling said end links toward one another;

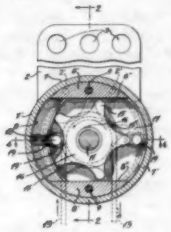
the mounting means being spaced laterally inwardly of said body a distance enabling the mounting means to be rotated relative to said body through a predetermined angular range for positioning the chain-engaging means on the ends of said chain.

4,367,863

TORQUE LIMITER MEANS FOR CONTROLLING ROTARY MOTION

Jacques Dulondel, 1081 Saint-Viateur, Outremont, Prov. of Quebec, Canada (H2V 1Y6), and Philippe R. de la Mesuziere, 30 Zircon Crt., Willowdale, Ontario, Canada (M2H 2A1)

Filed Sep. 16, 1980, Ser. No. 187,949
Int. Cl.³ B66D *3/04*
U.S. Cl. 254—391 **5 Claims**



1. A torque limiter means for controlling rotary motion comprising a casing, a shaft rotatably mounted in said casing, a pulley fixedly secured to said shaft and adapted to rotate therewith; said pulley carrying a cable; a rotor having an odd number of radially-disposed and equally spaced-apart cam projections defining an equal number of indentations, and also rigidly fixed to said shaft; a follower plate transversely oriented to said shaft and laterally displaceable relative to the same; two longitudinally-aligned cam follower pins carried by said follower plate and in contact with said rotor at all times, at two diametrically-spaced zones relative to the shaft axis, and rectilinear guide means formed by said casing and engaging the assembly of said follower plate and of said follower pins for restricting said follower plate to a rectilinear back-and-forth motion, whereby said shaft is braked by the force required to accelerate and decelerate said follower plate during its back-and-forth motion.

4,367,864

NEWEL POST ASSEMBLY

Gene H. Eldeen, 17861 Jaguar Path, Lakeville, Minn. 55044

Continuation-in-part of Ser. No. 123,841, Feb. 22, 1980, Pat. No. 4,295,638. This application Dec. 12, 1980, Ser. No. 215,798
Int. Cl.³ E04H *17/14*
U.S. Cl. 256—59 **17 Claims**

1. A newel post assembly for installation with respect to a floor type surface, comprising:

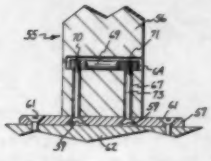
an elongate wooden newel post for intended use in a generally upright orientation and having a transverse bottom surface;

said newel post having a generally horizontal opening near the lower end thereof;

said newel post having a generally vertical opening extending from the bottom surface to the horizontal opening;

an anchoring member positioned in the horizontal opening;

a base plate in surface engagement with the transverse bottom surface of the newel post, said plate defined by first, second, third and fourth edges respectively with transverse dimensions greater than the bottom surface of the newel first fastening means connected at one end to the base plate, extending through the vertical opening and



connected at an opposite end to the anchoring member to secure the base plate to the newel post generally adjacent the first of said base edges; and

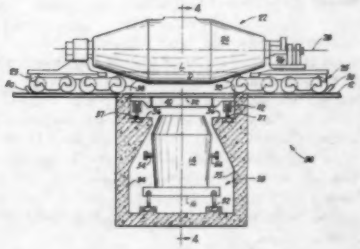
means to connect the base plate to floor type surface comprised as a plurality of mounting holes disposed proximate the second, third and fourth edges of said base plate in surrounding relationship to said newel post, and second linear fastening means extending from the upper surface of the base plate through the mounting holes with respect to a floor type surface.

4,367,865

METHOD AND APPARATUS FOR EMPTYING BOTTLE CARS

Matthew J. Blair, Niles, and George E. Keifer, Jr., Warren, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Filed Sep. 21, 1981, Ser. No. 304,198
Int. Cl.³ F27D *3/14*
U.S. Cl. 266—44 **14 Claims**



1. A method of pouring iron or slag or both from a railroad bottle car in which a bottle that contains molten iron is supported by spaced trucks on an extending track and is rotatable about a horizontal longitudinal axis to pour contents from an opening located between said trucks into a first vessel located below the car and track, said method comprising the steps of:

positioning the car on the track and the vessel below the track so the trucks are spaced on opposite sides of the vessel and the bottle opening is in alignment with the vessel in the direction of the extending track,

moving a section of the track between the trucks in a direction transversely of the extending track to a location to one side of the car, and

rotating the bottle about said axis to move the opening from a position adjacent the top of the bottle toward the bottom

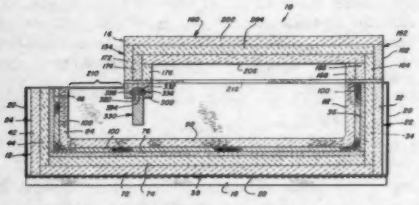
in a direction away from the side to which the track section was moved, to pour at least a portion of the contents into said first vessel in a path that passes through an area where the track section was located prior to being moved.

4,367,866

FURNACE ADAPTED TO CONTAIN MOLTEN METAL

John N. Acker, Ringwood, and Robert A. Petersen, Elgin, both of Ill., assignors to Sunbeam Equipment Corporation, Meadville, Pa.

Filed Apr. 10, 1981, Ser. No. 252,971
Int. Cl.³ F27D 1/16; F27B 14/00
U.S. Cl. 266—99 5 Claims



1. In a furnace, which is adapted to hold molten zinc, molten aluminum, or other molten metal, a combination comprising:

(a) an outer vessel, which has lateral and bottom walls,

(b) a removable, seamless, vacuum-formed, ceramic-fiber, one-piece, inner vessel, which is adapted to contain the molten metal, which has lateral and bottom walls, and which is fitted into the outer vessel so as to leave sufficient clearance around the inner vessel, between the lateral walls of the inner and outer vessels, for particulate matter to be packed around the inner vessel, between the lateral walls of the inner and outer vessels, and

(c) a mass of unbonded particulate matter, which is packed around the inner vessel, between the lateral walls of the inner and outer vessels, so as to lodge the inner vessel laterally within the outer vessel despite nonconformities between the lateral walls of the inner and outer vessels, and so as to enable the inner vessel to be lifted readily from the outer vessel,

(d) a layer of said matter, which is packed on the bottom walls of the outer vessel, between the bottom walls of the inner and outer vessels, so as to support the inner vessel and its contents firmly despite nonconformities between the bottom walls of the inner and outer vessels, and

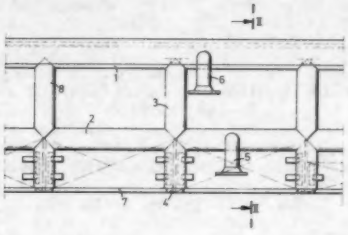
(e) an electrical circuit including electrical conductors, which are imbedded within the layer of said matter on the bottom wall of the outer vessel, said matter being packed so as to be previous to the molten metal, the electrical circuit not being attached to the inner vessel, the electrical circuit being open in normal operation of the furnace, the conductors being arranged to close the electrical circuit if any of the molten metal leaks from the inner vessel, perfuses said matter, and bridges the conductors, the electrical circuit including a signalling means, which is arranged to emit a signal if the electrical circuit is closed.

4,367,867

COOLING SUPPORT ELEMENTS FOR METALLURGICAL FURNACE

Heinrich Schnitzer, Rheinberg, and Volker Mauermann, Kempen, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Sep. 8, 1981, Ser. No. 300,023
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1980, 3036564
Int. Cl.³ C21B 7/10
U.S. Cl. 266—190 3 Claims



1. In a metallurgical furnace in which the interior wall of the furnace, above the melting zone, is provided with interconnected cooling pipes which are supported on a skeletal support structure, the improvement characterized by

(a) said support structure comprises horizontal rings configured as a cage around said furnace;

(b) said rings are constructed from pipe-shaped segments; and

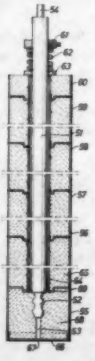
(c) said horizontal rings are positioned at vertically spaced intervals from one another.

4,367,868

REFRACTORY LINING FOR A METAL PIPE

Ingvar G. A. Blom, and Reima J. Vuokivi, both of Nyhamnsläge, Sweden, assignors to Hoganas AB, Sweden

PCT No. PCT/SE80/00056, § 371 Date Oct. 1, 1980, § 102(e) Date Oct. 1, 1980, PCT Pub. No. WO80/01923, PCT Pub. Date Sep. 18, 1980
PCT Filed Feb. 28, 1980, Ser. No. 245,347
Claims priority, application Sweden, Mar. 16, 1979, 7902388
Int. Cl.³ C21C 5/32
U.S. Cl. 266—225 5 Claims



1. A lance for supplying materials to metallurgical processes, comprising a steel tube, means at an inlet end of said tube for connecting the tube to a supply hose for said materials, at least one outlet opening for said materials at an outlet end of said

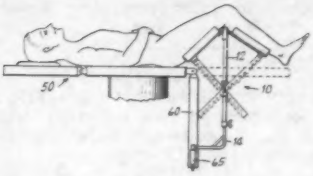
tube, and a protecting sheath encompassing said tube, said sheath comprising an inner metal wall sized to form a clearance with said tube, an outer wall, and a refractory ceramic composition between said walls, and means for fastening a front end of said sheath to said steel tube adjacent said outlet end, a second end of said sheath being freely movable relative to said inlet end of said tube.

4,367,869

STIRRUP ATTACHMENT FOR SURGICAL TABLE

Thomas H. Dailey, 347 E. 84 St., New York, N.Y. 10028, and Gregory W. Brabbee, 74 Brayton St., Englewood, N.J. 07631

Filed Sep. 10, 1981, Ser. No. 300,925
Int. Cl.³ A61G *13/00*
U.S. Cl. 269—324 **9 Claims**



1. A stirrup attachment for a surgical table which comprises:
an extendable support shaft provided at one end with an attachment member for attaching the support shaft to a surgical table and hinging means at its other end, the shaft being rotatable about the attachment member;
a first locking means for fixing the support shaft in a desired position relative to the attachment member;
an adjustable calf support member, comprising a portion adapted to receive and support a human calf hingedly attached at one end to said hinging means and a first rod provided with a series of slots pivotally attached to the other end of said calf support portion;
an adjustable thigh support member, comprising a portion adapted to receive and support a human thigh, hingedly attached at one end to said hinging means opposite said calf support portion and a second rod provided with a series of slots pivotally attached to the other end of said thigh support portion;
a slideably adjustable sleeve member on the shaft, said sleeve member being provided with two engagement members, each adapted to receive and hold one of said rods by engaging one of said slots, so that said calf and thigh support members can be held in desired positions; and
a second locking means for fixing the sleeve in a desired position relative to the shaft.

4,367,870

SHOULDER STAND DEVICE

Robert A. Birch, Gardner Hollow Rd., Poughquag, N.Y. 12570

Filed Apr. 25, 1980, Ser. No. 143,553
Int. Cl.³ A63B *23/02*; A47C *3/02*
U.S. Cl. 272—144 **1 Claim**

1. A device for assisting a person to assume a shoulder stand comprising a base member, said base member consisting of a horizontal planar seat portion and a vertical planar back portion positioned at substantially a 90° angle to each other, an arcuate portion connecting said horizontal and said vertical portions, said horizontal planar portion being shorter than said vertical portion and acting as a seat in the horizontal position and as a leg support in the vertical position, an upstanding side member on each side of said base member, each side member being the approximate length of said base member said side members having cut out portions therein to receive the shoulders of a user, a cushioning pad of the approximate length of said base member fitted between said side members and resting on said base member, at least one shaped member for insertion between said cushioning pad and said base member, at least one of said at least one shaped member being wedge shaped, said device being a seat when resting on its seat portion, and rotatable backwards 90° onto its back portion so that a person seated therein can assume a shoulder stand with the wedge shaped member being located between the backs of the thighs and the base member so that while lying on one's back the

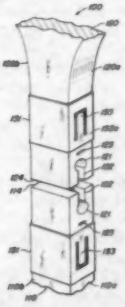
extended legs assume a position backward slightly beyond vertical so as to maintain the shoulder stand position, and pivotally mounted support legs on said upstanding side members rotatable from a non-use position when said device is used on its back for a shoulder stand to a use position when used as a seat by extending back beyond the base so as to prevent rearward tilting.

4,367,871

ARTICULABLE TRAINING DEVICE FOR RACQUET SPORTS AND THE LIKE

William E. Schiefer, 305 Walnut St., San Diego, Calif. 92103

Filed Jul. 25, 1980, Ser. No. 172,178
Int. Cl.³ A63B *69/38*
U.S. Cl. 273—29 A **3 Claims**



1. A tennis racquet comprising an elongate handle member, a second member having a ball rebounding surface, means connecting said handle and second members for free relative pivotal movement about an axis substantially transverse to the longitudinal dimension of said handle and generally parallel with said ball rebounding surface, said means comprising a flexible key member having shoulder means formed upon opposite ends thereof, each of said handle and second members having a recess extending inwardly from an end face thereof and communicating between opposite side portions of said handle and second members, said recesses being of a shape substantially complemental to said key member so that said key member may be manually, slideably inserted into said recesses

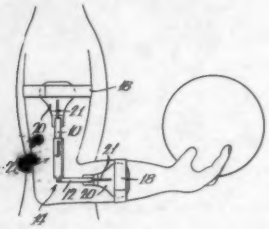
for engagement therein, and means for securing said flexible key member within said recesses, said securement means comprising first and second sleeve members slideably surmounted, respectively, upon said handle and second members, said sleeve members each including means for detachably locking said sleeve members upon said handle and second members in first closed positions whereby to secure said flexible key member therebetween.

4,367,872

ATHLETIC ACCESSORY

Herbert Langston, 401 E. 32nd St., Chicago, Ill. 60616

Filed Sep. 18, 1980, Ser. No. 188,582
Int. Cl.[3] A63B *69/36, 69/00*
U.S. Cl. 273—54 B 3 Claims



1. An athletic accessory comprising:

a pair of rigid members;

pivot means for pivotally connecting said rigid members;

attaching means for securing each of said rigid members to the corresponding limb members of a jointed limb of an athlete, with said pivot means located coincident with the axis of rotation of the athlete's limb joint;

a sleeve slidably mounted on and encircling one of said rigid members adjacent said pivot means and movable between a first position accommodating pivotal movement of said rigid members and the athlete's limb members and, upon longitudinal alignment of said rigid members, a second position overlying said pivot means and engaging the adjacent ends of said rigid members to lock said rigid members in longitudinal alignment for thereby preventing the athlete from inadvertently rotating the limb joint, said sleeve having a vertically disposed bayonet slot cut through said sleeve;

a stop pin mounted on said one of said rigid members extending slidably through the bayonet slot in said sleeve for limiting the travel of said sleeve;

a shoulder on said one of said rigid members, underlying said sleeve and facing toward said pivot means;

an internal flange on said sleeve facing toward said shoulder to define a chamber between said sleeve, said shoulder and said internal flange; and

a compression spring located within said chamber biased at one end against said shoulder and at the other end against said internal flange, for resiliently biasing said sleeve toward the other rigid member.

4,367,873

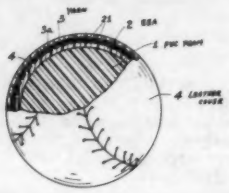
GAME BALL

Paul P. H. Chang, Room 3, 7 Fl. No. 603, Tung-Hwa S. Rd., Taipei, and Chen-Shin Chu, No. 17, La. 685, Chung-Hsing Rd., Lung-Tan, Taoyuan, both of Taiwan

Filed Jun. 30, 1981, Ser. No. 279,020
Int. Cl.[3] A63B *37/12, 37/06*
U.S. Cl. 273—60 R 5 Claims

1. A game ball for use in playing such games as baseball or softball comprising a spherical core, a core cover, yarn windings and an outer leather cover to have essentially the same playing characteristics as conventional balls, the improvements which comprise:

(a) a spherical core made of polyvinyl chloride foam coated with a core cover made of ethylene copolymer; and



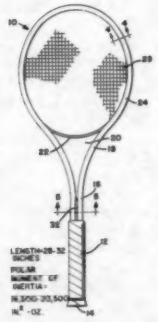
(b) corrugations and rough patterns being formed on the outer surface of said core cover.

4,367,874

TENNIS RACQUET AND METHOD OF MAKING SAME

Anthony F. Staub; Norman T. Staub, both of Dayton, Ohio, and John R. Erwin, Paradise Valley, Ariz., assignors to Starwin Industries, Inc., Dayton, Ohio

Filed Jan. 4, 1979, Ser. No. 929
Int. Cl.[3] A63B *49/00*
U.S. Cl. 273—73 R 3 Claims



1. A method of making a tennis racquet, comprising the steps of:

selecting a conventional reference racquet design having a frame including a head portion connected to a handle portion having a butt end, said frame having a predetermined overall length (Lr) in the range of 26–28 inches and a predetermined polar moment of inertia about an axis perpendicular to the longitudinal central axis of said racquet, at about 24 inches from said butt end and remote from said racquet, in the range of 16,500 to 20,500 in.^{2}-oz,

selecting a desired length (L) for the new racquet in the range of 28–32 inches and greater than Lr,

determining the weight of each of a plurality of incremental elements of said reference racquet along the length of said frame,

determining the distance of each such element from said perpendicular axis,

multiplying the length of each such element by a factor X equal to L/Lr,

determining the new weight of each such element for said new length of racquet by dividing the square of the distance from said perpendicular axis of each original such element times the weight thereof by the square of the distance from said perpendicular axis of each such element of said new length of racquet,

determining the necessary cross sectional shapes for portions of the frames of said new length of racquet such that said

determined weights of the new such elements and the weight distribution throughout the new length of racquet will be obtained, and then,

constructing a new racquet having said selected length and incremental elements of said length and said weights and cross sections as determined in the previous steps,

whereby said new racquet will have the same said predetermined polar moment of inertia as said reference racquet.

4,367,875

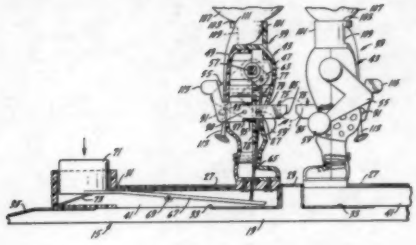
BOXING GAME

Gordon A. Barlow, Glenview; John R. Newcomer, Des Plaines; John R. Krutsch, Glenview, and Fred Bezark, Northbrook, all of Ill., assignors to Gordon Barlow Design, Skokie, Ill.

Filed Feb. 8, 1982, Ser. No. 346,638

Int. Cl.³ A63F *9/14*; A63H *13/06*

U.S. Cl. 273—85 F **8 Claims**



1. A boxing type amusement game including a pair of figures of boxers, each figure of a boxer including:

a torso having a blow actuated trigger, means to releasably mount a head on the torso in the form of an inflated launchable balloon,

at least one arm pivotally mounted on the torso and having a fist means for hitting and actuating a trigger of an opposing boxer, and

means to releasably hold the launchable balloon mounted on the torso under tension and sealed against air leakage,

said balloon release and sealing means being operably connected to the trigger to release the balloon from tension, unseal the air and launch the balloon upon actuation of the trigger as the result of a blow from an opposing boxer.

4,367,876

SCORE DISPLAY APPARATUS FOR PINBALL GAME MACHINES AND DISPLAY METHOD THEREFOR

Yukio Kotoyori, Nihonbashi, Japan, assignor to Kabushiki Kaisha Universal, Oyama, Japan

Filed Mar. 12, 1980, Ser. No. 129,652

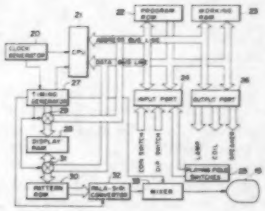
Claims priority, application Japan, Mar. 12, 1979, 54-27706

Int. Cl.³ A63F *7/40, 9/22*

U.S. Cl. 273—121 A **8 Claims**

5. A method for operating pinball machines having the steps of including a casing containing a playing field providing circuitous paths for a ball rolling on the playing field, providing a micro-computer for computing the scores of a plurality of players and providing a CRT visual display unit on which the scores computed by the micro-computer are displayed, said steps further comprising computing in said micro-computer the score of the player who is up according to the circuitous path followed by a ball about said playing field as directed by the player who is up, and simultaneously displaying the scores of a plurality of players by said CRT visual display unit with the score of the player who is up displayed in large-size digits and the other scores in small-size digits.

8. In a pinball machine including a casing containing a playing field providing circuitous paths for a ball rolling on the playing field and a micro-computer for computing the scores of a plurality of players and a CRT visual display unit on which the scores computed by the micro-computer are displayed; the improvement comprising means for computing in said micro-computer the score of the player who is up according to the circuitous path followed by a ball about said playing field as directed by the player who is up, means for simulta-



neously displaying the scores of a plurality of players by said CRT visual display unit with the score of the player who is up displayed in large-size digits and the other scores in small-size digits and means connected to said score displaying means for providing said large- and small-size digits.

4,367,877

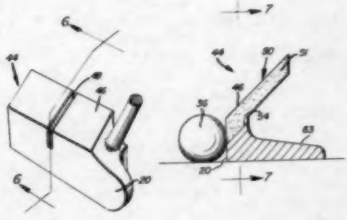
PUTTER

Ronald F. Gibson, 811-4th Ave. N., Kent, Wash. 98031, and Hendrick W. Haynes, Seattle, Wash., assignors to Ronald F. Gibson, Kent, Wash.

Filed Aug. 2, 1979, Ser. No. 63,335

Int. Cl.³ A63B *53/04*

U.S. Cl. 273—164 **5 Claims**



1. A golf club comprising:

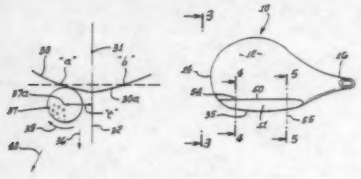
a shaft;

a grip region formed on said shaft; and

a golf ball striking head attached to said shaft, said head including a striking surface portion and an upwardly sloped planar extension portion extending rearwardly of the head from an area proximate to said striking surface portion, said extension portion including a first mirrored surface with sighting means centrally positioned thereon, said sighting means including a groove cut into said first

mirrored surface, said groove having darkened sidewalls so as to form a contrast between said first mirrored surface and said groove, and further wherein said head includes a second mirrored surface disposed proximate said groove for reflecting light through said groove whereby said groove is thoroughly illuminated during a use of said golf club.

4,367,878
GOLF CLUB HEAD
Glenn H. Schmidt, 1857 Los Encinos, Glendale, Calif. 91208
Filed Apr. 20, 1981, Ser. No. 255,686
Int. Cl.³ A63B *53/04*
U.S. Cl. 273—175 **5 Claims**

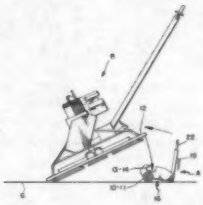


1. In a golf wood head having a heel, toe, top surface, bottom surface, a rear side and a front face to strike a ball, the improvement comprising
(a) said front face having bulge curvature defined by the line intersections of parallel planes normal to said front face and inclined downwardly and rearwardly relative to the horizontal, at a shallow angle,
(b) said intersections defining curved lines which are parabolas, when viewed from a position above the club head and spaced rearwardly of a line normal to said bottom surface, whereby the front face as defined is tilted rearwardly,
(c) said front face also having roll curvature defined by intersections of forwardly extending vertical planes with said front face, said last named intersections defining curved lines which are forwardly convex,
(d) the forwardmost parabolic curved line having a focus which is in direct rearward alignment with the center of said front face,
(e) said front face having compound curvature as defined and intersecting the uppermost frontal portion of the head along a generally straight line when viewed downwardly from a position above said front face.

4,367,879
GOLF TEE WITH HOLDING CUP WITH SPIN CONTROL MEMBER
Steve Messer, 1325 Washington Ct., Brookfield, Wis. 53005
Filed Dec. 11, 1980, Ser. No. 215,511
Int. Cl.³ A63B *57/00*
U.S. Cl. 273—211 **6 Claims**

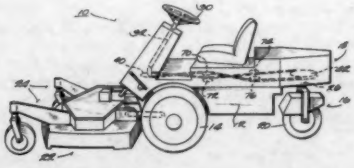
1. A golf ball spin control tee comprising:
an elongated ground engaging stem having an anchoring point at the lower end and a ball supporting head on the upper end including a shield extending upward from said supporting head and having a semispherical portion for engaging the back surface of a ball and to be struck by a golf club for imparting an impelling force to the ball, and elongated arm means extending from and supported by said shield for partially encircling and extending to and terminating in an outer end at a position at the front opposite said shield of a ball resting on said head, and said arm means including friction means at the outer end thereof for frictionally engaging the surface of the ball for affecting the spin of the ball when struck and propelled from said tee by a golf club.

4,367,880
TRANSPORT DEVICE FOR WHEELLESS POWER DRIVEN EQUIPMENT
Edward M. Harding, Middletown, Md., assignor to Equipment Development Company, Inc., Frederick, Md.
Filed May 5, 1980, Ser. No. 146,246
Int. Cl.³ B62B *1/12*
U.S. Cl. 280—47.13 R **5 Claims**



1. A dolly for transport service when attached to a base and an operating handle of a relatively large and heavy surface treating machine and detachably connectable between said base and said handle of the machine;
said dolly including an upstanding cradle for engagement with said handle of the machine and being extendably, manually adjustable to regulate the angular position of said machine handle;
said manually adjustable cradle including a locking lever to retain the cradle in an extended position to set said handle in a desired angular position with respect to a surface normally supporting said machine;
whereby a manually applied downward push on said handle tilts said machine with respect to a base support surface to transpose the entire support of said machine from said surface to said dolly for manually maneuverable transport service.

4,367,881
VEHICLE STEERING SYSTEM
Dwight E. Williams, Lincoln, Nebr., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Oct. 1, 1980, Ser. No. 192,711
Int. Cl.³ B62D *9/00*
U.S. Cl. 280—96 **7 Claims**



1. A steering system for a vehicle including a frame and a steerable dirigible wheel unit rotatably mounted on the frame

for rotation about a steering axis to steer the vehicle, said steering system including a rotatable steering control member rotatably supported from the frame at a location remote from the dirigible wheel unit, a drive sprocket mounted for common rotation with said steering control member, a first section of chain trained about said drive sprocket, a driven sprocket mounted for common rotation with the dirigible wheel about the steering axis, a second section of chain trained above said driven sprocket, a first set of two coaxially aligned pulleys rotatably mounted on the frame between said drive and driven sprockets, a second set of two coaxially aligned pulleys rotatably mounted on the frame between said first set of pulleys and said driven sprocket, and first and second flexible members interconnecting the ends of said first and second chain sections such that said driven sprocket is rotated in response to rotation of said drive sprocket, said first and second flexible members being trained over the same side of separate ones of said pulleys in each of said sets.

4,367,882

SUSPENSION APPARATUS

Graham H. Alexander, Upper Arlington, and David C. Doerschuk, Grove City, both of Ohio, assignors to Battelle Memorial Institute, Columbus, Ohio

Filed Apr. 11, 1980, Ser. No. 139,361
Int. Cl.³ B62K *25/08*
U.S. Cl. 280—276 **12 Claims**

1. Suspension apparatus for the front end of a motorcycle, bicycle, or like vehicle, having a brake on the front wheel, comprising

a suspension device connected to permit relative movement between the frame of the vehicle and the axle of the front wheel,

means for converting friction force from any substantial braking of the front wheel into an approximately proportional hydraulic force, and

means for applying the hydraulic force to the suspension device so as to oppose and at least largely counterbalance the inertial force thereto resulting from the braking action, and thus to at least largely eliminate diving by the front end of the vehicle when the brake is applied.

4,367,883

WHEELIE SUPPORT

Ray C. Anderson, 7605 S. Quebec, Tulsa, Okla. 74136

Continuation-in-part of Ser. No. 191,124, Sep. 26, 1980. This application Oct. 20, 1980, Ser. No. 198,846
Int. Cl.³ B62H *1/10*
U.S. Cl. 280—301 **3 Claims**

1. Apparatus for use with a wheel conveyance such as a bicycle or the like having at least one forward and one rearward wheel for rolling on a support surface in which the vehicle has a frame to which the forward and rearward wheels are rotatably supported, the apparatus providing means of adding stability to the vehicle when the front wheel is raised from the support surface, comprising:

a structural member affixed to said frame and extending in the plane of and forwardly of the vehicle rear wheel; and

a third wheel rotatably supported at the outer end of said structural member, the third wheel being normally positioned above the support surface and arranged to engage

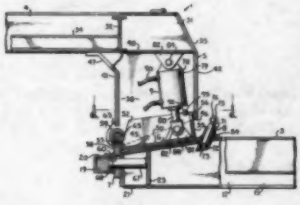
the support surface by means controllable by the operator when the vehicle frame is pivoted to raise the front wheel from the support surface, the third wheel being between said rear wheel and said front wheel, enabling the user to balance the vehicle, at least for a limited period of time, on the rear wheel and the third wheel.

4,367,884

REMOVABLE GOOSENECK FOR TRAILERS

Howard L. Johnson, 7500 NW. 108th St., Kansas City, Mo. 64154, and David A. Kramer, 3101 Sante Fe, Independence, Mo. 64055

Filed Dec. 15, 1980, Ser. No. 216,511
Int. Cl.³ B62D *53/06*
U.S. Cl. 280—423 B **1 Claim**



1. A gooseneck structure detachably connecting a tractor and trailer, said trailer including an inclined front portion adapted for engagement with said gooseneck structure, said gooseneck structure comprising:

(a) an elongate, generally horizontally extending beam member having forward and rearward portions with said forward portion including means for connection to a fifth wheel of said tractor;

(b) an upstanding frame member having front, rear and opposite side walls, top and bottom portions, and providing an enclosure; said top portions affixed to rearward portions of said beam member so that said frame member depends therefrom with said bottom portions positioned adjacent said trailer, said frame member rear wall having a lower edge portion; said frame member side walls having aligned apertures therethrough;

(c) a foot member comprising a substantially vertically oriented planar member located at said bottom portions and having front and rear end portions, said foot having upwardly extending side walls oriented substantially parallel with said frame member side walls, said foot side walls including a notch on an upper edge thereof near a rear portion thereof, said notches and frame member side wall apertures alignable;

(d) a pivot connecting said foot member front end portion to said frame member adjacent said front walls and providing vertical pivoting movement of said foot member relative

to said frame member, said rear portion extending past said frame member rear wall;

(e) coordinating guide pin and link means detachably connecting said front end portion to said trailer at a first location;

(f) coordinating locking pin and bushing means positively locking and detachably connecting said rear end portion to said trailer at a second location spaced longitudinally from said first location for preventing vertical separation of said rear end portion from said trailer;

(g) a power fluid ram having upper and lower ends respectively pivotally connected to said foot member at a position between said front and rear end portions and to said beam member between said front and rear walls and within said enclosure; whereby said ram is retractable to swing said foot member upwardly and tilt said trailer downwardly for detachment of said foot member therefrom and extensible to swing said foot member downwardly and tilt said trailer upwardly for drafting, said foot member rear portion pivoting into a position adjacent said rear wall edge when said ram is retracted;

(h) a removable stop pin extending between said frame member and said foot member for limiting upward swinging of said foot member and downward tilting of said trailer, said pin selectively and manually insertable through said frame member side wall apertures and engageable with said foot side wall notches when said foot member is in a position for drafting thereby retaining said trailer at a desired ride height for drafting without usage of hydraulic rams; and

(i) said frame member rear wall edge engageable with said foot member rear end portion when said power ram is retracted, said frame member rear wall edge comprising a stop member limiting the upward pivoting movement of said foot thereby orienting said foot member in an inclined position commensurate with the trailer front portion inclined portion for attachment thereto.

4,367,885

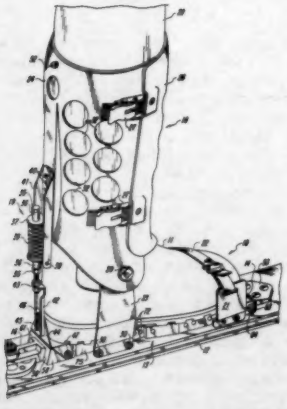
SKI BINDING

Paul C. Ramer, Golden, Colo., assignor to Alpine Research, Inc., Golden, Colo.

Filed Apr. 11, 1980, Ser. No. 139,252

Int. Cl.³ A63C 9/08

U.S. Cl. 280—614 **20 Claims**



14. A ski binding for releasably connecting a skier's leg and associated footwear to a ski comprising in combination:

a toe piece mounted on said ski including laterally extending pin means;

a boot plate releasably connected to said ski, said boot plate being rotatably connected to said pin means, whereby rotation of said boot plate relative to the toe piece is provided about an axis transverse to said ski;

a heel piece mounted on said ski;

said heel piece being releasably connectable to said boot plate to thereby selectively permit rotation of said boot plate relative to said toe piece;

a leg cast which surrounds and retains the lower leg of the skier; strut means interconnecting said leg cast and said boot plate and releasably connected to the leg cast and to the boot plate; and

a pair of generally vertically extending braces fixedly connected to either side of said boot plate and pivotally connected to said leg cast at the ankle of the skier whereby said leg cast can pivot about a second axis transverse to said ski passing through the ankle of the skier.

4,367,886

WEBBING SUPPORTING STRUCTURE

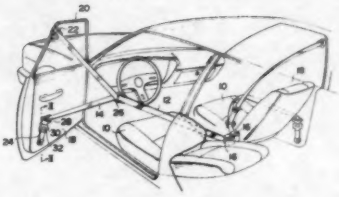
Kozo Hamada, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 15, 1981, Ser. No. 225,358

Claims priority, application Japan, Mar. 5, 1980, 55-28744[U]

Int. Cl.³ B60R 21/10

U.S. Cl. 280—802 **4 Claims**



1. A webbing supporting structure for use in a seatbelt system for automatically fastening webbings to an occupant upon his entering a vehicle, comprising:

(a) an outer webbing secured at one end thereof to the upper portion of a door,

(b) an inner webbing movably connected to an intermediate portion of said outer webbing and windable upon a retrator,

(c) a rigid anchor plate connected with the other end of said outer webbing, said anchor plate being pivotably supported on a base connected to a lower rear portion of the door, said anchor plate being pivotably supported on said base about a substantially horizontal shaft extending along the inner surface of the door,

(d) a wire connected at one end thereof with the intermediate portion of said rigid anchor plate and extending into the door through an opening in an inner surface of the door,

(e) a spring interposed between the other end of said wire and a vehicle body, a first tensile force of said spring at the time when the door is open being larger than an opposite force at the intermediate portion of said anchor plate caused by a winding force of said retractor and a second tensile force of said spring at the time when the door is closed being smaller than the opposite force,

whereby when the door is opened, said first tensile force of said spring allows said anchor plate to approach the door so as to facilitate the actions of the occupant entering or leaving the vehicle, and when the door is closed, said anchor plate moves away from the door by the winding force of said retractor so as to restrain the occupant.

4,367,887

AUTOMATIC PASSIVE SAFETY SEAT BELT SYSTEM FOR A VEHICLE

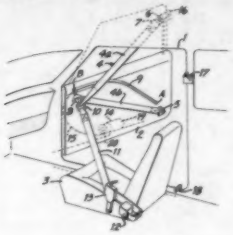
Juichiro Takada, 3-12-1 Shinmachi, Setagayaku, Tokyo, Japan

Filed Nov. 25, 1980, Ser. No. 210,257

Claims priority, application Japan, Nov. 30, 1979, 54-164949[U]

Int. Cl.³ B60R *21/00*

U.S. Cl. 280—803 **1 Claim**



1. A passive safety seat belt system for a vehicle having a restraint position wherein the passenger of the vehicle is restrained from movement within the vehicle and a release position wherein the passenger is not restrained from movement, the door of the vehicle being closed in the restraint position and open in the release position, comprising:

a direct current electric motor with first and second brushes positioned diametrically opposed on the commutator;

a third brush positioned adjacent said second brush and contacting the commutator;

means for connecting said first and second brushes only with a source of current to energize said motor such that it produces a first torque output in a forward direction to transfer the belt system from the restraint position to the release position; and

means for connecting said first and third brushes only with a source of current to energize said motor such that it produces second torque smaller than said first torque and in a reverse direction to transfer the belt system from the release position to the restraint position;

whereby the time for transfer of the belt system from the release position to the restraint position is substantially equal to the time for transfer from the restraint position to the release position.

4,367,888

PLUG COUPLER FOR SEVERAL HOSE CONNECTIONS

Siegfried Leverberg, Bremenkampstrasse 77, D-4200 Oberhausen 14; Manfred Hofmann, Geleitstrasse 17, D-6053 Obertshausen, and Helmuth Hoffmann, Albert-Einstein-Strasse 5, D-5060 Bergisch Gladbach 1, all of Fed. Rep. of Germany

Filed May 28, 1980, Ser. No. 154,013

Claims priority, application Fed. Rep. of Germany, May 31, 1979, 2922186

Int. Cl.³ F16L *39/02*

U.S. Cl. 285—28 **11 Claims**

1. A hose coupling device for multiple hose connections requiring a tightly fitted hose fitting comprising:

a plug portion having a support means with a plurality of bores;

hose fitting means disposed within said plurality of bores;

hose fitting pins extending from said hose fittings, and guide pin means;

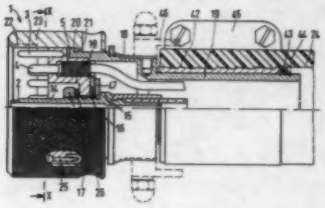
a socket portion consisting of a flange adaptor section and a spacer section;

said flange adaptor section comprising

a flange adaptor means having a plurality of bores containing replaceable gasket means positioned in a groove in each of said plurality of bores, and

a releasable plate means connected to said flange adaptor means with a clamping bolt having a central bore receiving said guide pin means;

said releasable plate means comprising a shoulder means releasably holding said releasable plate means to said flange adaptor means, a lock washer means cooperating with a groove in said clamping bolt, and a plurality of



bores registering with said plurality of bores in said flange adaptor means for receiving said hose fitting pins;

said spacer section having a shell means with a plurality of bores for registering with said flange adaptor section bores and means connecting said spacer section bores to said releasable plate means.

4,367,889

FIRE GUARDED BLOWOUT PREVENTER HOSE

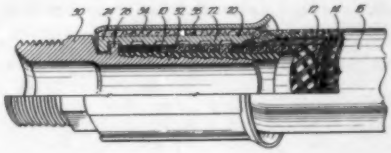
Philip J. Redl, Sherwood Park, Canada

Continuation-in-part of Ser. No. 44,735, Jun. 1, 1979, abandoned. This application Dec. 30, 1980, Ser. No. 221,474

Claims priority, application Canada, Dec. 28, 1978, 318706

Int. Cl.³ F16L *39/02*

U.S. Cl. 285—149 **7 Claims**



1. A fireproof blowout preventer hose for oil well drilling rigs, comprising an inner tube suitable for conducting hydraulic fluid, said inner tube having a covering of:

(a) at least one layer of high tensile material;

(b) a moisture-proof bonding layer covering the high tensile material;

(c) a layer of fireproof material;

(d) an exterior cover layer;

and a coupling comprising cooperating inner and outer coaxial members adapted to retain at least the inner tube and the tensile layer therebetween, the outer member of the coupling being enveloped by a layer of fire-resistant insulating material retained by a non-combustible impact resistant shell.

4,367,890

TURBINE SET WITH A GENERATOR FEEDING A NETWORK OF CONSTANT FREQUENCY

Franz Spirk, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Feb. 2, 1981, Ser. No. 230,329

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1980, 3005375; Sep. 26, 1980, 3037147

Int. Cl.³ H02P *13/20*

U.S. Cl. 290—52 **11 Claims**

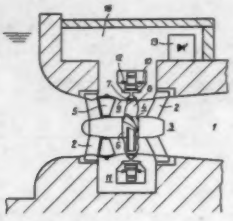
1. In a turbine set for supplying electric power to a distribu-

tion network operating at a fixed network frequency of 50 or 60 Hz comprising:

a turbine traversed by water and comprising a shaft and fixed blades;

a generator having a rotor and a stator with windings, said rotor coupled to said shaft; and

a frequency-controllable converter coupling the generator stator winding to the network, the improvement comprising:



(a) said generator adapted to operate at a frequency of less than 20 Hz;

(b) said frequency-controllable converter being a direct converter; and

(c) the speed of rotation of the turbine being continuously controllable to obtain optimum efficiency at the power being delivered.

4,367,891

INDUSTRIAL ROBOT WITH A GRIPPING MECHANISM

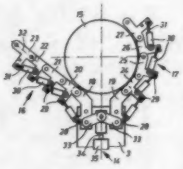
Gerd Wauer; Dietmar Becker, and Rubi Schönthaler, all of Kaiserslautern, Fed. Rep. of Germany, assignors to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed May 23, 1979, Ser. No. 41,622

Claims priority, application Fed. Rep. of Germany, May 30, 1978, 2823584

Int. Cl.³ B25B *1/00, 1/24, 5/16*

U.S. Cl. 294—88 **4 Claims**



1. A gripping mechanism, for an industrial robot, for gripping workpieces of diverse configuration comprising at least two gripping fingers pivotally mounted on the robot, each of said gripping fingers having a plurality of workpiece engagement members movable thereon, means for moving said gripping fingers between an open position out of engagement with a workpiece and an engagement position in which said fingers grip a workpiece, means acting on each of said workpiece engagement members for moving each of said workpiece engagement members of each finger into adjusted positions in which said finger conforms to the configuration of the workpiece to be gripped, clamping means for locking each of said workpiece engagement members of each finger relative to each other in the adjusted positions, said moving means being operable to move each of said gripping fingers with said workpiece engagement members locked in said adjusted positions, and wherein each of said gripping fingers comprises a series of said workpiece engagement members successively hinged together, and said means acting on each of said workpiece engagement members comprises a fluid pressure operated piston and cylinder connected between adjacent engagement members to pivot said engagement members relatively to engage around the workpiece to be gripped.

4,367,892

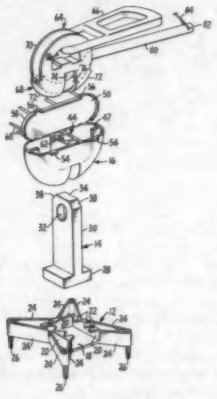
LIFT SYSTEM FOR TILT-UP WALLS

Neil L. Holt, Foster City, Calif., assignor to The Burke Company, San Mateo, Calif.

Filed Oct. 23, 1980, Ser. No. 199,944

Int. Cl.³ B66C *1/36, 1/66*

U.S. Cl. 294—89 **2 Claims**



1. Apparatus for putting up a tilt-up wall section comprising a hoisting cable, a shackle connected to the cable, a ring clutch interconnecting the shackle with an anchor emplaced in the wall section, the ring clutch comprising a ring having a split therein and an arcuate locking bolt rotatable relative to said ring between a locked condition extending across the split and a released condition removed from the split, said bolt having an elongated lever arm extending generally parallel to the wall section during lifting and in the direction of the upper end thereof, a release cable attached to the distal end of the lever arm to remotely operate the lever arm by rotating it outwardly and downwardly to a predetermined degree relative to the wall section to rotate the bolt to the released condition and disconnect the ring clutch from the anchor, and hoisting cable-controlled means to selectively block or allow rotation of the lever arm to said predetermined degree, said means being operated responsive to the application of lifting force to the hoisting cable to block rotation of the lever arm upon the application of lifting force to the hoisting cable and release the arm for rotation upon slacking off of the hoisting cable.

4,367,893

GRIPPING DEVICE

Arne Berg, Västeras, Sweden, assignor to ASEA Aktiebolag, Västeras, Sweden

Filed Jan. 14, 1981, Ser. No. 224,904

Claims priority, application Sweden, Jan. 17, 1980, 8000382

Int. Cl.³ B25J *15/00*

U.S. Cl. 294—106 **8 Claims**

1. A gripping device for manipulating objects, comprising:

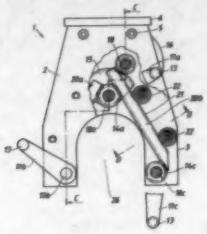
a support member;

first, second and third shafts rotatably journaled in said support member and carrying respective gear wheels and gripping arms rotatable with the respective shaft and gear wheels;

a first rack member interconnected with the gear wheels of said first and second shafts;

a second rack member interconnected with the gear wheels of said first and third shafts; and

a drive motor connected to rotate said first shaft such that rotation thereof causes movement of said first and second



rack members and commensurate rotation of said second and third shafts by means of the respective gear wheels carried thereon to synchronously rotate the gripping arms to grasp and ungrasp an object.

4,367,894

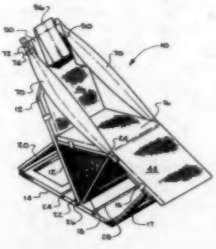
FOLDABLE DENTAL CHAIR

John L. Manuel, 960 Alexander Dr., Haysville, Kans. 67060

Filed Oct. 31, 1980, Ser. No. 202,643

Int. Cl.³ A47C *4/00*

U.S. Cl. 297—19 **10 Claims**



1. A foldable dental examining chair comprising:

a planar base member which supports the overall chair including adjustment means horizontally spaced on the base member;

a planar backrest member having disengageable attachment means at its lower end for engaging the adjustment means;

a backrest support panel pivotally attached at one end approximate the rear end of the base member and at the opposite end pivoted to the backrest;

a planar seat member removably attached to the front side of the backrest approximate its midpoint;

a seat support panel pivotally attached at one end to the front of the seat member and pivotally attached at the opposite end to the backrest, forming a rigid triangle with the seat and backrest, the attachment means on the backrest is engageable with various notches allowing the backrest and seat to be tilted toward the horizontal while at the same time moved forward so that the head of the patient in the various positions of the chair remains in the approximately same relative horizontal position.

4,367,895

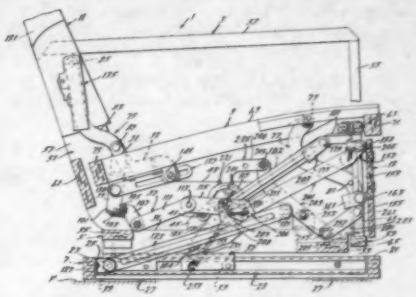
RECLINABLE CHAIR

William Pacitti, Monroe, and Harold P. Ruble, Deerfield, both of Mich., assignors to La-Z-Boy Chair Company, Monroe, Mich.

Filed May 29, 1980, Ser. No. 154,374

Int. Cl.³ A47C *1/02*; A61G *15/00*

U.S. Cl. 297—85 **31 Claims**



1. A chair comprising base means, a chair frame, pivot means to tiltably mount said frame on said base means for pivotal tilting about a horizontal axis, a leg rest mounted on the chair frame for movement between a retracted position and an elevated position as well as intermediate positions, manually operated actuating means on the chair frame for moving the leg rest to said positions, tilt means acting between the chair frame and the base means for tilting the chair frame by pivoting it about said axis, and means operatively connecting the actuating means to the tilt means for simultaneously operating the tilt means to pivot the chair frame about said axis during movement of the leg rest and for holding the chair frame in a tilted position determined by and corresponding to the position of the leg rest.

4,367,896

ARMATURE FOR BICYCLE SADDLES

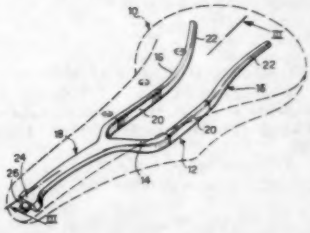
Mario Nieddu, Valdellatorre, Italy, assignor to Cinelli Ciao & C. S.r.l., Milan, Italy

Filed Dec. 2, 1980, Ser. No. 212,165

Claims priority, application Italy, Dec. 6, 1979, 53785/79[U]

Int. Cl.³ B62J *1/00*

U.S. Cl. 297—195 **11 Claims**



1. An armature for supporting a shell of a bicycle saddle from a clamp carried by a saddle support pipe, said armature consisting of a single die-forged piece of light alloy, said single piece having a general shape similar to that of a fork with a yoke portion, a pair of symmetrical prongs extending in one direction each from a respective opposite end of the yoke portion, and a stem portion extending from the middle of the yoke portion in a direction opposite to said one direction and in a general plane of symmetry of the prongs, each of said prongs

having a respective rectilinear fastening portion extending from the yoke and a respective tail portion extending from the clamping portion, said rectilinear fastening portions being parallel to each other, so as to define a general base plane which is perpendicular to said plane of symmetry, and being adapted to be clamped in said clamp, said tail portions diverging from each other and having free ends which are adapted to support a rear portion of the saddle shell, and said stem portion having a free end which is adapted to support a front portion of the saddle shell.

4,367,897

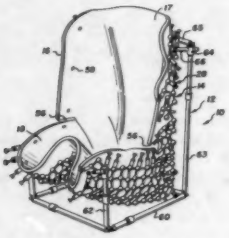
ADJUSTABLE SEAT FOR THE HANDICAPPED

Steven J. Cousins, 27 Stag Leys, Ashtead, Surrey, England (KT21 2TF)

Filed Dec. 29, 1980, Ser. No. 220,697

Int. Cl.³ A47C 3/00

U.S. Cl. 297—284 7 Claims



1. An adjustable seat comprising a support frame, a shapeable matrix mounted on the support frame and being formed of a multiplicity of modular units arranged in longitudinal and transverse rows, said modular units having passageways extending therethrough and contact surfaces surrounding open ends of said passageways, flexible members extending through the passageways of the modular units of each row to marginal edges of the shapeable matrix, anchor means securing corresponding ends of the flexible members to marginal edges of the shapeable matrix, and tension-applying devices on marginal edges of the shapeable matrix for tensioning the flexible members whereby the contact surfaces of adjoining modular units are frictional drawn together initially at a pressure allowing the shapeable matrix to be contoured to fit and properly brace selected parts of the body of a seated occupant and subsequently at a greater pressure thereby maintaining the shapeable matrix in its contoured condition.

4,367,898

EXCAVATING MACHINES FOR TUNNELING WITH TEMPLATE FIXED TO BOOM

Terence Oven, and Robert H. Higgs, both of Burton-on-Trent, England, assignors to Coal Industry (Patents) Limited, London, England

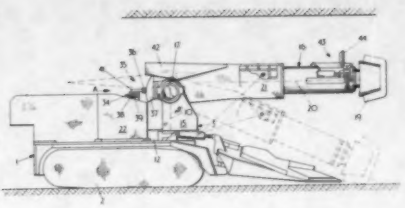
Filed Dec. 29, 1980, Ser. No. 221,364

Claims priority, application United Kingdom, Jan. 25, 1980, 8002606

Int. Cl.³ E21D 9/10

U.S. Cl. 299—1 10 Claims

1. An excavating machine for excavating rock or mineral to extend an underground roadway or tunnel, comprising a carriage moveable along the roadway or tunnel, a support assembly mounted on the carriage, a cutter-carrying boom pivotally supported on the support assembly, ram means for controlling pivotal movement of the boom, a control panel including means for controlling pivotal movement of the boom, an indication mechanism including a cutter-position indicator for indicating the position of the cutter, said indicator being mounted on either the support assembly or the carriage so as to be fixed relative to said boom; a template adjacent the indicator and defining a reduced scale profile of the roadway or tunnel cross-section, the template being mounted for movement with



the boom so that the template moves in relation to the indicator.

4,367,899

HOLDER ASSEMBLIES FOR SENSITIZED CUTTER TOOLS ON MINING MACHINES

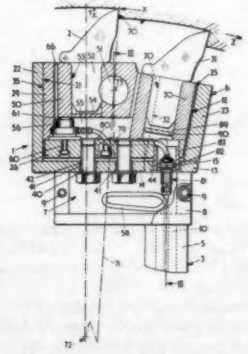
Raymond A. Whittaker; Raymond Lukaszewicz, and John A. Ford, all of Burton-on-Trent, England, assignors to Coal Industry (Patents) Limited, London, England

Filed Jan. 9, 1981, Ser. No. 223,799

Claims priority, application United Kingdom, Jan. 11, 1980, 8001019

Int. Cl.³ E21C 35/08

U.S. Cl. 299—1 8 Claims

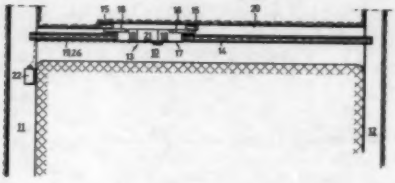


1. A sensitized cutter tool assembly for mounting on a rotary cutter head of a mining machine, the cutter being mounted on a drive shaft of the mining machine for rotation about the shaft axis, the sensitized cutter tool assembly comprising a sensitized cutter tool for sensing cutting reaction, a holder adapted to hold the sensitized cutter tool, a pivotal mounting pivotally supporting the holder with respect to the cutter head, and sensor means arranged for sensing the cutting reaction on the sensitized cutter tool, said cutting reaction tending to urge the holder to pivot about the pivotal mounting, the pivotal axis of the pivotal mounting positioned substantially to lie on a line extending between the rotational axis of the cutter head and the cutting margin of the sensitized cutter tool.

4,367,900
MINERAL MINING INSTALLATION WITH ELECTRONIC CONTROL

Thomas Trümper, Werne, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhütte Westfalia, Lunen, Fed. Rep. of Germany

Filed Jan. 19, 1981, Ser. No. 226,358
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1980, 3003910
Int. Cl.³ E21C *29/00*
U.S. Cl. 299—1 **11 Claims**

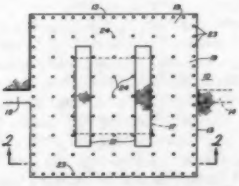


1. In a mineral mining installation comprising a winning machine with a main body equipped with at least one rotary cutting means, first drive means carried on the body for driving the cutting means, and second drive means carried on the body for moving the machine; the improvement comprising: the second drive means is a three-phase a.c. motor and an electronic control system remote from the machine controls the second drive means to vary the speed thereof in dependence on the operation of the cutting means.

4,367,901
METHOD FOR FORMING AN IN SITU OIL SHALE RETORT

Chang Y. Cha, Golden, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Oct. 28, 1980, Ser. No. 201,631
Int. Cl.³ E21C *41/10*
U.S. Cl. 299—2 **18 Claims**



1. A method for recovering liquid and gaseous products from an in situ oil shale retort formed in a retort site in a subterranean formation containing oil shale, the retort having boundaries of unfragmented formation and containing a fragmented permeable mass of formation particles containing oil shale comprising the steps of:

(a) excavating formation from within the retort site for forming at least one void extending horizontally across the retort site, leaving zones of unfragmented formation above and below such a void;

(b) drilling a first group of substantially parallel shot holes and a second group of substantially parallel shot holes into at least one of the zones of unfragmented formation within the retort site, the first group of shot holes being adjacent at least one of the boundaries of the retort site, the distance between adjacent shot holes in the first group of shot holes being less than the distance between adjacent shot holes in the second group of shot holes;

(c) placing explosive charges in the first and second group of shot holes;

(d) detonating the explosive charges in the first group of shot holes to propagate a crack extending between adjacent shot holes in the first group of shot holes and thereafter detonating the explosive charges in the second group of shot holes to explosively expand the zone of unfragmented formation towards the void for forming a fragmented permeable mass of formation particles in the retort;

(e) establishing a retorting zone in an upper portion of the fragmented mass;

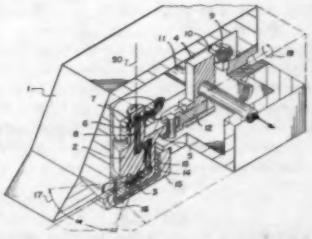
(f) introducng a retorting gas into the fragmented mass for sustaining the retoring zone and for advancing the retorting zone through the fragmented mass; and,

(g) withdrawing liquid and gaseous products of retorting from a lower portion of the fragmented mass on the advancing side of the retorting zone.

4,367,902
TOOL FOR HYDROMECHANICAL OR HYDRAULIC MINING OR FOR CUTTING MINERAL OR BITUMINOUS MATERIALS

Karl H. Schwarting, Voerde; Heinrich Goris, Hamminkeln; Roland Günther, Wesel; Joachim Holz, Dortmund, and Kurt Ogorek, Oberhausen, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Augsberg-Nürnberg Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 9, 1981, Ser. No. 232,559
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1980, 3005486
Int. Cl.³ E21C *27/18, 25/60*
U.S. Cl. 299—42 **16 Claims**



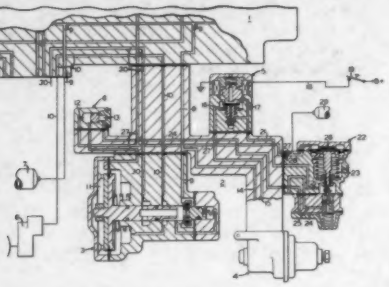
1. A tool for cutting a material along a path with a liquid jet directed onto the material comprising a housing having an interior chamber, said housing having an opening communicating with said chamber, a nozzle body, means for mounting said nozzle body to said housing through said opening for swiveling motion about a swivel axis, said nozzle body having a first portion including a cylindrical stem symmetrically disposed about the swivel axis within said chamber and a second portion extending through said opening including a nozzle having a nozzle bore for discharging the liquid jet, drive means operatively connected to said first portion for swiveling said nozzle body about the swivel axis, and means defining a fixed circular channel about said stem, said stem having a lengthwise bore therein which is symmetrical with the swivel axis and in communication with said nozzle bore and at least one radial bore radially extending through said stem to establish fluid communication between said circular channel and said lengthwise bore.

4,367,903

SYSTEM FOR AUTOMATICALLY DELAYING APPLICATION OF A SNOW BRAKE FOR A RAILWAY VEHICLE

Robert J. Worbois, North Huntingdon, Pa., assignor to American Standard Inc., Wilmerding, Pa.

Filed Oct. 27, 1980, Ser. No. 200,744
Int. Cl.[3] B60T *15/46*
U.S. Cl. 303—13 7 Claims



1. A brake control system for controlling brake apparatus to apply and release the brakes of a railway vehicle comprising:

(a) means for providing a first brake control pressure in accordance with the degree of brake desired during a normal brake application;

(b) means for providing a second brake control pressure at a predetermined level to provide a light brake application during release of said normal brake application, said predetermined level of said second brake control pressure being less than said first brake control pressure;

(c) relay valve means subject to said first and second brake control pressures for effecting operation of said brake apparatus;

(d) control valve means for connecting the higher one of said first and second brake control pressures to said relay valve means; and

(e) timing means for delaying operation of said control valve means so as to withhold said connection of said second brake control pressure to said relay valve means for a predetermined time following release of said first brake control pressure, thereby permitting operation of said brake apparatus to a brake release position prior to said light brake application becoming effective.

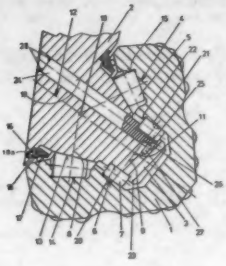
4,367,904

ROTARY DRILL BIT WITH CONICAL ROTARY CUTTERS

Armin Olschewski, Schweinfurt; Manfred Brandenstein, Eusenheim, and Lothar Walter, Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Mar. 5, 1981, Ser. No. 240,993
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1980, 8007104[U]
Int. Cl.[3] E21B *10/20;* F16C *19/00*
U.S. Cl. 384—95 8 Claims

1. In a rotary drill bit assembly, comprising a drill bit body, at least one trunnion and a rotary cutter rotatably supported on the trunnion by bearing means including at least one inner roller bearing, the rollers of the inner roller bearings running in a deep radial bearing race groove in the trunnion and a deep radial bearing race groove formed in the bore of the rotary cutter and a filling opening extending generally axially in the trunnion between the inner bearing race grooves, characterized in that the outer bearing facing the drill bit body comprises a tapered roller bearing including a plurality of tapered rollers and wherein the filling opening for the rolling elements



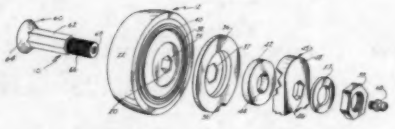
of the inner bearing is arranged radially inside the inner bearing race of the tapered rollers in the trunnion.

4,367,905

WHEELED SUPPORT ASSEMBLY FOR CONVEYORS WITH LOCKING AND FASTENING FEATURE

Randal W. Nauta, Wyoming, Mich., assignor to C. L. Frost & Son, Inc., Grand Rapids, Mich.

Filed Nov. 19, 1980, Ser. No. 208,285
Int. Cl.[3] F16C *33/80, 43/04*
U.S. Cl. 308—182 35 Claims



1. In a wheeled support assembly for conveyors including a plurality of rolling elements, outer race means and inner race means for supporting said rolling elements in a space therebetween to allow rotation of said outer race means with respect to said inner race means, shield means adjacent at least one side of said race means for covering said space between said race means and shielding said rolling elements to resist their contamination with foreign matter, support means for supporting an object to be transported on said assembly, and shaft means for securing together and supporting said inner race means, shield means and support means, the improvement comprising:

said shaft means having a non-circular outer circumference;

sand inner race means, shield means and support means each including a non-circular aperture therethrough corresponding in shape to said shaft means; said shaft means extending through said respective apertures to simultaneously lock said inner race means, shield means and support means against rotation with respect to one another and said shaft means; retaining means spaced along said shaft means for holding said inner race means, shield means and support means together on said shaft means;

at least a portion of said shield means abutting against said one side of said inner race means;

said assembly also including a spacing member intermediate said support means and said portion of said shield means; said retaining means tightly securing said support means against said spacer and said spacer against said portion of said shield means;

said retaining means including a head at one end of said shaft means; said shaft means having a threaded portion at the opposite end from said head, said head abutting said inner race in opposition to said one side, said threaded portion of said shaft means projecting beyond said support means;

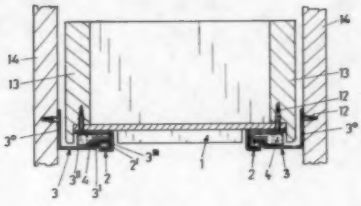
said retaining means also including a threaded fastener received on said threaded portion.

4,367,906

PULL-OUT GUIDE FOR DRAWERS

Erich Röck, Höchst, Austria, assignor to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed Sep. 18, 1980, Ser. No. 188,601
Claims priority, application Austria, Sep. 27, 1979, 6330/79
Int. Cl.³ F16C *21/00*
U.S. Cl. 312—330 R **6 Claims**



1. A guide assembly for use on each of opposite sides of a drawer in an article of furniture of the type wherein the drawer is slidably insertable into and removable from a furniture body, said assembly comprising:

a pull-out rail adapted to be mounted on the bottom of a drawer;

a supporting rail adapted to be mounted on a side portion of an article of furniture, said supporting rail including a vertical flange and first and second horizontal flanges extending from opposite sides of said vertical flange;

means for transferring the load of the drawer to the article of furniture, said means comprising a roller carriage mounted between said pull-out and supporting rails and carrying a plurality of supporting rollers arranged laterally of each other and lying substantially in a horizontal plane;

said plurality of rollers including first rollers positioned laterally of a first side of said vertical flange and contacting said first horizontal flange at a first surface of said supporting rail; and

said plurality of rollers further including second rollers positioned laterally of a second side of said vertical flange and resting adjacent said second horizontal flange at a second surface of said supporting rail.

4,367,907

CIRCUIT MONITORING JACK

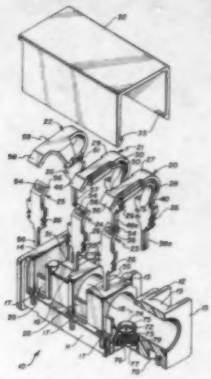
Josef J. Buck, Minneapolis, Minn., assignor to Magnetic Controls Company, Minneapolis, Minn.

Filed Aug. 4, 1980, Ser. No. 175,353
Int. Cl.³ H01R *29/00*
U.S. Cl. 339—113 R **27 Claims**

1. An electrical jack comprising:

an elongated housing having a generally cylindrical opening therein for insertion of a plug member having first and second electrical contact portions;

at least one contact assembly mounted in said housing and including a first contact member having a portion extending transversely across said cylindrical opening and a second contact member adapted for selective electrical contact with said first contact member, said first contact member including a first contact element movable between a first position in which said first contact element and said second contact member are electrically engaged and a second position in which said first contact element and said second contact member are electrically disengaged and a second contact element disposed generally radially inwardly of said first contact element and electrically connected therewith, said second contact element being adapted for selective electrical engagement with the first and second contact portions of the plug member, and being movable in a generally radial direction between first and second positions as a result of such engagement with



the first and second contact portions of the plug member; and

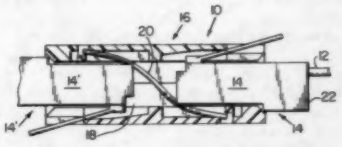
means for moving said first contact element between its first and second positions in response to movement of said second contact element between its first and second positions, respectively.

4,367,908

ELECTRICAL CONNECTOR COUPLING

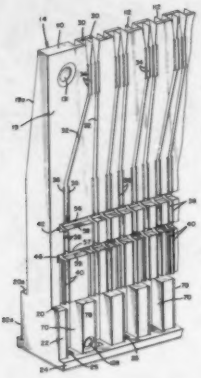
James J. Johnston, Old Saybrook, Conn., assignor to Akzona Incorporated, Asheville, N.C.

Filed Jun. 5, 1980, Ser. No. 156,786
Int. Cl.³ H01R *13/514*
U.S. Cl. 339—154 A **16 Claims**



1. A coupling member for joining two electrical cable connectors in electrically conducting relation to each other, each of the connectors having a plurality of electrical terminals externally exposed at an end thereof, said coupling member comprising an axially elongated housing having an axially extending bore therethrough for receiving the two electrical connectors in opposite ends thereof, a plurality of resilient elongated parallel electrical contacts disposed within said housing and extending generally longitudinally of said housing and diagonally across said bore, means securing the opposite ends of said one electrical contact within said housing for limited movement relative to said housing, and means for securing each of said connectors within an associated end portion of said bore with the terminals thereof in registry with said contacts to bias each of the terminals into and maintain it in electrically contacting engagement with an associated one of said contacts.

4,367,909
RIBBON CABLE CONNECTOR
Walter C. Shatto, Jr., Harrisburg, Pa., and Walter M. Young, Largo, Fla., assignors to AMP Incorporated, Harrisburg, Pa.
Continuation of Ser. No. 28,952, Apr. 11, 1979, abandoned. This application Oct. 15, 1980, Ser. No. 197,049
Int. Cl.³ H01R *13/00*
U.S. Cl. 339—176 MF **5 Claims**



1. A multi-contact electrical connector of the type having two rows of electrical contact terminals and intended to be installed on the end portion of a flat multi-conductor cable, said connector comprising a dielectric body having a conductor receiving end, a mating end, and oppositely facing first and second sidewalls extending from said conductor receiving end to said mating end, the improvement comprising:

a plurality of terminal receiving cavities in said oppositely directed sidewalls, each said cavity having one of said terminals therein,

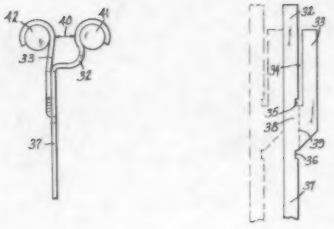
a plurality of entries in said conductor receiving end, some of said entries communicating with said first sidewall and other of said entries communicating with said second sidewalls, all entries having a conductor receiving portion which lies along a common straight line extending the length of the conductor receiving end of the dielectric body, said straight line defining the center line of a straight path, said path having a greater width than the thickness of said conductors, whereby said conductors can be moved into the entries in a coplanar array,

a plurality of guide grooves in said oppositely directed sidewalls, each said guide groove communicating between one of said entries and one of said terminal receiving cavities, whereby,

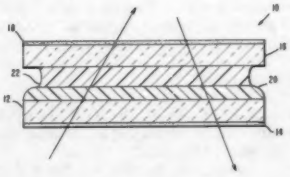
upon moving each conductor in said multi-conductor cable into one of said entries some of said conductors will be biased to said first sidewall and other of said conductors will be biased to said second sidewall, and upon aligning said conductors into said conductor guide grooves, each said conductor will communicate with a terminal receiving cavity for termination to an electrical terminal therein.

4,367,910
MINI-TERMINAL
Jack Seidler, 59-40 15th St., Flushing, N.Y. 11359
Filed Feb. 2, 1981, Ser. No. 230,907
Int. Cl.³ H01R *5/04*
U.S. Cl. 339—275 B **11 Claims**

1. A terminal clip for securement to a contact pad on a circuit bearing chip comprising an elongated clip body portion having a free end and a stem end, said body portion being cut longitudinally from the direction of the free end along at least one cut line to define at least two substantially parallel fingers, said body being folded along at least one fold line which is an extension across the body portion of said at least one cut line, said fingers being bent out of the plane of the body portion into positions defining a gap adapted to receive an edge portion of a circuit bearing chip and at least one finger being provided with a solder mass.



4,367,911
METHOD AND ASSEMBLY FOR HOLOGRAPHIC EXPOSURE
Andrejs Graube, Marina del Rey, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Jul. 14, 1980, Ser. No. 167,882
Int. Cl.³ G03H *1/02*
U.S. Cl. 350—3.61 **16 Claims**



1. An assembly for exposure of a photosensitive material, said assembly comprising:

a rigid base element;

a photosensitive material layer mounted on said base element;

a rigid cover element above said photosensitive material layer, at least one of said elements being substantially optically transparent; and

a solid synthetic polymer composition material between said photosensitive material layer and said cover element to form a rigid assembly.

2. The assembly of claim 1 wherein said substantially transparent rigid element is glass, having an anti-reflective coating thereon on the side away from said photosensitive material layer.

3. The assembly of claim 1 wherein both of said rigid ele-

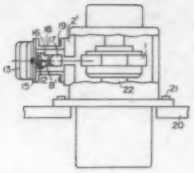
ments are made of substantially optically transparent glass having an anti-reflective coating thereon on the side opposite said photosensitive layer.

4,367,912

LIGHT DEFLECTING APPARATUS

Takashi Kitamura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 24, 1980, Ser. No. 132,880
Claims priority, application Japan, Mar. 29, 1979, 54-37391
Int. Cl.³ G02B *27/17*
U.S. Cl. 350—6.8 **17 Claims**



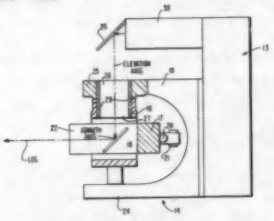
1. A light deflecting apparatus for deflecting a light beam to scan over a predetermined scanned surface, comprising:
- a mirror for deflecting the light beam;
- a case enclosing said mirror and being attached to a base plate;
- a laser oscillator attached to said case in spaced-apart relationship with the base plate for generating the light beam; and
- a lens for forming an image of the light beam on said scanned surface.

4,367,913

INERTIALLY DAMPENED HELIOSTAT ASSEMBLY

Dale R. Logan, Bowie, and John J. Buckley, Catonsville, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 29, 1981, Ser. No. 268,546
Int. Cl.³ G02B *23/00*
U.S. Cl. 350—500 **5 Claims**



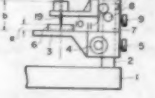
1. A heliostat device for an electro-optical system, comprising
- a base having a pair of spaced parallel extending arms, each of said arms having adjacent their outer ends a bearing surface for pivotally supporting an elevation gimbal between said arms, one of said bearing surfaces being annular with a central opening through its associated arm;
- a housing attached to said base inwardly of the outer ends of the arms;
- a first reflecting surface fixedly attached to said housing in a position to reflect a line of sight extending substantially axially through the bearing opening;
- an elevation gimbal having bearing surfaces spaced to fit in the bearing surfaces in the arms to pivot about a horizontal axis in elevation substantially coincident to the line of sight, one of said bearing surfaces having an opening to align with the central opening in the associated bearing surface of the arm, said elevation gimbal being annular in configuration;
- an azimuth gimbal attached to the elevation gimbal to pivot about a vertical azimuth axis, said azimuth gimbal being annular in configuration;
- a second reflecting surface attached to the azimuth gimbal to pivot about an axis substantially coincident to the azimuth axis, and to intersect and redirect the line of sight;
- a half angle drive assembly responsive to relative turning movement between said elevation gimbal and said azimuth gimbal about said azimuth axis in the same direction as the elevation gimbal azimuth movement but to one half the angular extent; and
- dampening means fastened to said half-angle drive assembly to minimize the effect of vibration of the heliostat members on the line of sight.

4,367,914

MICROSCOPE EQUIPPED WITH A MICRO MANIPULATOR

Shizuo Mukasa, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 25, 1980, Ser. No. 210,530
Claims priority, application Japan, Nov. 29, 1979, 54/164294[U]
Int. Cl.³ G02B *21/32*
U.S. Cl. 350—530 **3 Claims**



1. A microscope including a base and being equipped with a micro manipulator comprising a pipe for setting a needle detachably, a pipe holder assembly for holding said pipe, and a condenser lens assembly located below said pipe holder assembly and having a run-through slot allowing said needle to pass therethrough, a lower support erected on a base of said microscope and an upper support fixed to said condenser lens assembly, said condenser lens assembly being shiftably and rotatably mounted on said lower support, and said pipe holder assembly being shiftably and rotatably mounted on said upper support.

4,367,915

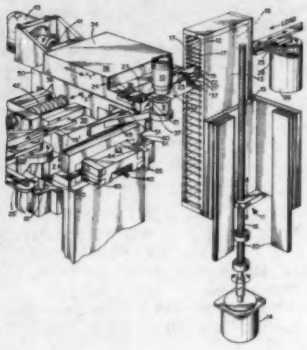
AUTOMATIC MICROSCOPE SLIDE

Michael P. Georges, P.O. Box 800, Norwood, Mass. 02062

Continuation of Ser. No. 920,157, Jun. 29, 1978, Pat. No. 4,248,498, which is a continuation of Ser. No. 746,617, Dec. 1, 1976, abandoned. This application Jan. 26, 1981, Ser. No. 228,762
The portion of the term of this patent subsequent to Feb. 3, 1997, has been disclaimed.
Int. Cl.³ G02B *21/26*
U.S. Cl. 350—530 **12 Claims**

1. A bio-medical microscope specimen slide positioning apparatus adapted for use in automatic sequential examination of a group of microscope specimen slides and comprising:
- a storage magazine for storing a plurality of said microscope specimen slides; means for said magazine operable for indexing a specimen slide to a specimen slide exit or entry position; specimen slide transfer means positioned relative to said storage magazine for removing and transporting from said magazine said specimen slide located in said

magazine and positioned at said specimen slide exit or entry position; a microscope specimen slide stage for receiving a specimen slide from said magazine; means for positioning and retaining said specimen slide on said specimen slide stage; translation means for moving and positioning said stage with a specimen slide supported thereon in a geometric plane; and means for mounting to the apparatus a microscope optical viewing system in a disposition



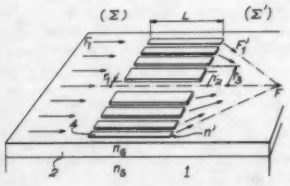
adjacent to said retained specimen slide such that by operation of said translation means said specimen slide can be moved about and positioned in the optical axis of said optical viewing system for optically examining the specimen on said specimen slide; said specimen slide transfer means including means positioned relative to said stage for removing said specimen slide from said stage after microscope examination.

4,367,916

FRESNEL LENS FOR INTEGRATED OPTICS

Patrick Mottier, and Serge Valette, both of Grenoble, France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 23, 1980, Ser. No. 162,162
Claims priority, application France, Jun. 22, 1979, 79 16081
Int. Cl.³ G02B 5/172, 1/00
U.S. Cl. 350—96.12 **14 Claims**



1. A phase displaced Fresnel lens for integrated optics, the lens having an optical axis, comprising a waveguide and arranged in symmetrical fashion on each side of the optical axis of the lens, a number p of overlayers disposed on the surface of said waveguide propagating a wave in accordance with a given propagation mode, the overlayer of order m from the axis having a width

$$l_m = \sqrt{(m+1)\lambda f}$$

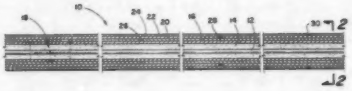
and a distance from the axis of $r_m = \sqrt{m\lambda f}$ in which f is the focal length of the lens, m is a parameter taking successively the different values of the natural sequence of integers between 1 to p and λ is the wavelength utilized, said overlayers of even or odd rate in the direction perpendicular to the movement of the light having a thickness w greater than the value for which the effective index of the subjacent part of the waveguide saturates, the phase displacement π of the luminous vibration at the level of said overlayers of even or odd rate resulting solely from the choice of the length L of each of said overlayers in the direction of progression of the light.

4,367,917

MULTIPLE SHEATH CABLE AND METHOD OF MANUFACTURE

Stanley J. Gray, 8502 E. 121st St., Bixby, Okla. 74008

Division of Ser. No. 112,933, Jan. 17, 1980, Pat. No. 4,317,003.
This application Jan. 8, 1981, Ser. No. 223,244
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.23 **5 Claims**



1. A multiple sheath cable comprising at least one elongated fiber optic conductor element surrounded by insulation material, a first tubular metal sheath tightly surrounding said insulation material and conductor element, said metal sheath comprising a plurality of elongated segments butt-welded to form spaced splice joints, said joints having diameter substantially equal to the diameter of the tubular sheath, at least one subsequent tubular metal sheath tightly surrounding said first tubular metal sheath and comprising a plurality of elongated segments butt-welded to form spaced splice joints, none of said second or subsequent splice joints being superimposed over the splice joint of the next preceding sheath.

4,367,918

PLASTIC CLAD OPTICAL FIBERS

Douglas A. Pinnow, Cheshire, Conn., assignor to Times Fiber Communications, Inc., Wallingford, Conn.

Filed Jan. 22, 1980, Ser. No. 114,196
Int. Cl.³ G02B 5/172
U.S. Cl. 350—96.30 **17 Claims**

1. A plastic clad optical fiber comprising:

(i) a core of a given refractive index comprised of silica and at least one dopant in an amount which is sufficient to achieve a refractive index substantially throughout the core which is at least 0.5% greater than the refractive index of silica; and,

(ii) a cladding surrounding said core comprised of a silicone resin having a refractive index less than the refractive index of silica;

said fiber being capable of functioning in a temperature range of −40° C. to −50° C. without significant loss of waveguiding ability.

4,367,919
DURABLE GLASS ELEMENTS

Chi F. Tung, and Benjamin T. Fellows, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 101,646, Dec. 10, 1979, abandoned, which is a continuation of Ser. No. 922,533, Jul. 7, 1978, abandoned, which is a continuation-in-part of Ser. No. 820,809, Aug. 1, 1977, abandoned. This application Mar. 19, 1981, Ser. No. 245,369

Int. Cl.³ C03C 3/08; G02B 5/28

U.S. Cl. 350—105 14 Claims

1. Durable visibly transparent clear microspheres less than about 2 millimeters in diameter, containing no more than about 5 weight-percent scattered crystallinity, and adapted for use as a reflective element in a pavement marking, said microspheres being formed from glass that consists essentially of ingredients as listed in the following table, in which percentages are given by weight:

B_2O_3	5–20
TiO_2	20–40
BaO and/or SrO	10–35
Alkali-metal oxide selected from Na_2O and K_2O	0–15
SiO_2	25–40
All other ingredients	0–15;

said glass being essentially free of CaO, and containing no more than 10 weight-percent ZnO; and said glass having an index of refraction between 1.6 and 1.9, and exhibiting a crush resistance of at least about 3500 kilograms per square centimeter.

7. Pavement marking tape comprising a backing and a layer of microspheres of claim 1, 2, 4, 5, or 6 carried on the backing.

4,367,920
RETROFLECTIVE SHEETING

Chi F. Tung, and James C. Coderre, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 80,434, Oct. 1, 1979, abandoned. This application Jun. 19, 1981, Ser. No. 275,275

Int. Cl.³ G02B 5/128

U.S. Cl. 350—105 19 Claims

1. Component sheet material useful in combination with a transparent layer applied in full contact with the front surface of the sheet material to complete a wet-or-dry retroreflective sheeting that is retroreflective at its front surface only, said sheet material being wound upon itself in a storage roll and comprising a binder layer and a monolayer of transparent microspheres partially embedded in and partially exposed above the binder layer, whereby the exposed portions of the microspheres become embedded in the transparent layer upon application of the layer to the sheet material; the microspheres being present in an amount sufficient to cover at least 75 percent of the area of the binder layer, being exposed above the binder layer by on the average less than 50 percent of their diameter, and being arranged with their front surfaces in substantial alignment, whereby the completed retroreflective sheeting exhibits a three-quarter-brightness angle of at least 35°; and silver versions of the completed retroreflective sheeting exhibit a retroreflective brightness at an incidence angle of −4° and divergence angle of 0.2° of at least 100 candella per square meter of sheeting per lux of incident light.

4,367,921
LOW POLARIZATION BEAM SPLITTER

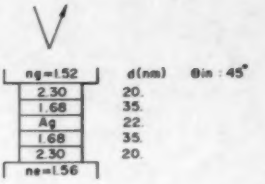
Mitsuharu Sawamura, Yokohama, and Susumu Ito, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 31, 1980, Ser. No. 174,002

Claims priority, application Japan, Aug. 10, 1979, 54-102492

Int. Cl.³ G02B 5/28, 27/10

U.S. Cl. 350—164 9 Claims



1. A beam splitter comprising:

a transparent substrate plate;

a first thin filmlayer of a dielectric substance laid on said substrate and comprising a plural number of component layers having different refractive indexes, at least one said component layer having a refractive index less than 1.8, and the sum of the optical film thickness of said component layers being about λ/4, wherein λ is a wavelength between 350 nm and 700 nm;

a metallic thin film layer laid on said first thin film layer; and

a second thin film layer of a dielectric substance laid on said metallic thin film layer.

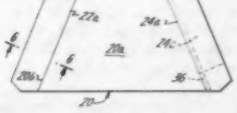
4,367,922
PENTAREFLECTORS AND THEIR MANUFACTURE

Morton S. Lipkins, 3 Nemeth St., Malverne, N.Y. 11565

Filed Sep. 17, 1980, Ser. No. 188,225

Int. Cl.³ G02B 5/08

U.S. Cl. 350—301 7 Claims



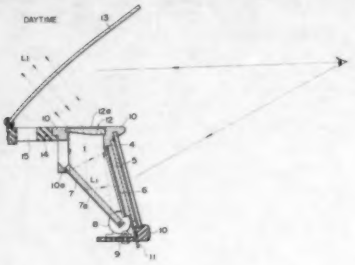
1. A pentareflector, including a base plate having an essentially flat reference surface, first and second reflector plates having respective optically flat reflecting surfaces that converge at 45° in relation to each other, each reflecting surface being disposed at 90° to said reference surface of said base plate, each said reflector plate extending upward from the upper surface of the base plate and meeting said base plate at a respective joint wherein a said surface of one of the plates of each joint abuts an edge surface of the other plate of that joint and is united thereto by bonding material confined to a zone that is narrow compared to the thickness of the plates, and a pair of unifying plates, each unifying plate being bonded to a respective one of said reflecting plates and to said base plate.

4,367,923

LIQUID CRYSTAL DISPLAY UNIT FOR AN AUTOMOTIVE VEHICLE

Masao Ishikawa, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 31, 1980, Ser. No. 173,883
Claims priority, application Japan, Aug. 1, 1979, 54-97379
Int. Cl.³ G02F 1/133
U.S. Cl. 350—345 **6 Claims**



1. A liquid crystal display unit for an automotive vehicle, comprising:

(a) a liquid crystal display device having front and back sides and disposed within the vehicle so as to be viewed from the front side thereof;

(b) a light source located at the back side of said liquid crystal device, said light source turning on depending on whether the vehicle headlights are illuminated;

(c) a lens for collecting incident light rays from outside of the vehicle; and

(d) a means for selectively introducing light rays into the back side of said liquid crystal display device from said light source, said introducing means comprising a transparent member provided with a reflective backing layer and being supported so as to be movable between a daytime illumination position in which the incident light rays from said collecting lens are introduced into the back side of said liquid crystal display device by the reflective backing layer and a nighttime illumination position in which the light rays emitted from said light source are alternatively introduced into the back side of said crystal display device by said reflective backing layer.

4,367,924

CHIRAL SMECTIC C OR H LIQUID CRYSTAL ELECTRO-OPTICAL DEVICE

Noel A. Clark, 3106 Kittrell Ct., Boulder, Colo. 80303, and Sven T. Lagerwall, 30 Snackwagen, Goteborg, Sweden

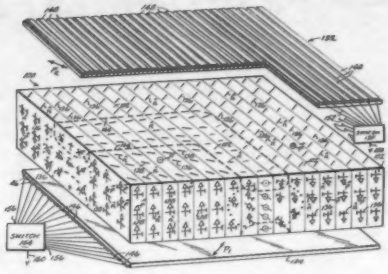
Filed Jan. 8, 1980, Ser. No. 110,451
Int. Cl.³ G02F 1/13, 1/133
U.S. Cl. 350—334 **24 Claims**

1. A liquid crystal electro-optical device comprising:

a quantity of chiral, at least one of smectic C and smectic H, liquid crystal having a plurality of adjacently disposed layers each comprised of a plurality of molecules, each molecule having a long axis;

first and second means, perpendicular to and contiguous with said layers, for aligning the long axes of said molecules adjacent to said first and second means parallel to said first and second means, said molecules of said layers in a bulk of said liquid crystal forming helixes having axes perpendicular to said layers, the distance between said first and second means being less than the distance at which said helixes form in the absence of an electric field, said first and second means causing said long axes to assume one of a first and second stable orientation;

means for applying an electric field to at least a portion of said layers, said electric field being parallel to said layers and perpendicular to said first and second means, and for reversing the direction of said electric field, the strength of said electric field being sufficient to shift the long axis of molecules in said portion of said layers from said first orientation to said second orientation upon application of



said electric field in a direction reversed from the direction of said electric field previously applied; and

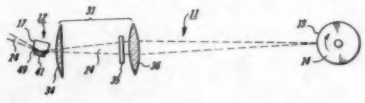
means for processing light passing through said liquid crytstal so that light passing through portions of said liquid crystal having said first orientation can be distinguished from light passing through portions of said liquid crystal having said second orientation.

4,367,925

INTEGRATED ELECTRONICS FOR PROXIMITY COUPLED ELECTRO-OPTIC DEVICES

Robert A. Sprague, Saratoga, and William D. Turner, San Marino, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 17, 1980, Ser. No. 188,171
Int. Cl.³ G02F 1/01
U.S. Cl. 350—355 **9 Claims**



1. In an electro-optic device including

an electro-optic element,

a plurality of electrodes intimately coupled to said electro-optic element, and

means coupled to said electrodes for applying voltages thereto, wherebyelectric fields are created within said electro-optic element;

the improvement comprising

an integrated circuit containing electronics for driving at least one of said electrodes,

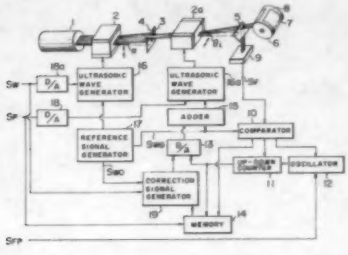
a conductive layer deposited on said integrated circuit, said conductive layer making electrical connections to said electronics and being patterned to define at least said one electrode, and

means engaged with said electro-optic element and with said integrated circuit for maintaining the electrode defined by said conductive layer within a small gap distance of said electro-optic element, thereby proximity coupling said fields into said electro-optic element.

4,367,926
LIGHT BEAM INTENSITY STABILIZING METHOD

Tetsuo Hohki, Ibaraki, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Japan

Filed Jun. 13, 1980, Ser. No. 159,389
Claims priority, application Japan, Jun. 20, 1979, 54-76684
Int. Cl.³ H04B 9/00
U.S. Cl. 350—358 **10 Claims**



1. A method for stabilizing the intensity of a light beam emitted by a light source and deflected by an acoustooptical deflector element which is controlled by a control signal, comprising the steps of:

(a) detecting the intensity of the light beam;

(b) comparing the light beam intensity detected with a predetermined reference light intensity;

(c) detecting the difference between the light beam intensity and the reference light intensity;

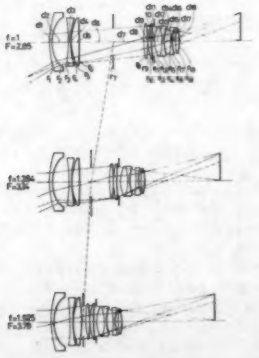
(d) storing a correction signal, corresponding to the difference detected into a memory; and

(e) controlling the control signal by the correction signal read out of the memory so that the intensity of the light beam through the acoustooptical deflector element may be maintained to a certain level.

4,367,927
ZOOM LENS SYSTEM

Toru Fujii, Hino, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 924,439, Jul. 13, 1978, abandoned. This application Oct. 24, 1980, Ser. No. 200,576
Claims priority, application Japan, Jul. 23, 1977, 52-87881
Int. Cl.³ G02B 15/14
U.S. Cl. 350—426 **3 Claims**

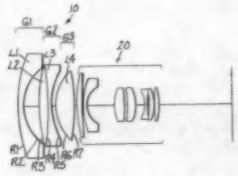


1. A retrofocus type zoom lens comprising movable lens groups including a front negative focusing lens group and a rear positive imaging variable-magnification lens group, an aperture stop arranged in said rear positive lens group, and a flare stop arranged between said front negative lens group and said rear positive lens group, said movable lens groups being arranged so as to be displaced along the optical axis for zooming, said flare stop being arranged so as to be displaced in conjunction with zooming operation but independently of the displacements of said lens groups and arranged to eliminate the coma flare at the intermediate field angle, arranged so as to be positioned at the intersecting point of axial marginal pencil and lower pencil of the maximum field angle and have as its semi-diameter a length between the optical axis and intersecting point and interrupt only a part of lower pencil of the intermediate field angle to eliminate the flare at the wide position and arranged so as to have such magnitude as touching the axial marginal pencil and interrupt a part of both lower pencils of the maximum and intermediate field angles to eliminate the flare at the tele position.

4,367,928
WIDE ANGLE LENS ATTACHMENT

Melvyn H. Kreitzer, Cincinnati, Ohio, and Muh-fa Chen, Daytona Beach, Fla., assignors to Vivitar Corporation, Santa Monica, Calif.

Filed Apr. 11, 1980, Ser. No. 139,346
Int. Cl.³ G02B 13/22
U.S. Cl. 350—453 **9 Claims**



1. An afocal reversed telescopic lens adapted to be used with a retrofocus prime lens to provide an increased field angle of the combined lenses upon axial alignment with the prime lens at the object end thereof, said lens comprising from the object end: a first negative group consisting of a meniscus element convex to the object, a second group in the form of a negative doublet including a positive element convex to the object, and a third positive group having convex object and image side surfaces.

4,367,929
FRAME FOR EYEGLASSES WITH INCLINABLE LENSES

Umberto Fortini, Via F. Caracciolo 18, Florence, Italy

Filed May 21, 1980, Ser. No. 151,837
Claims priority, application Italy, May 25, 1979, 11669/79[U]
Int. Cl.³ G02C 5/14, 5/08
U.S. Cl. 351—119 **4 Claims**

1. A frame for eyeglasses comprising a front part for the lenses to the ends of which there are articulated, along two principal articulations parallel to each other, two arms adapted to be swung against the front part and to be raised from same for use on the ears, characterized by the fact that each of the

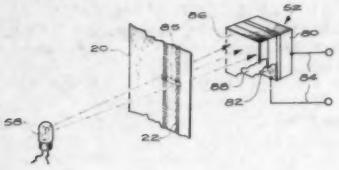
arms has a transverse articulation along a geometric axis transverse to the head and common to the two arms when the frame is mounted on the face in order to permit an inclination of the front part and therefore of the lenses along said transverse axis; the transverse articulations having a disc of relatively elastic material disposed between the portions of the two arms and pin means pivotally joining the portions of the arms and compressing said disc to hold the portions of the arms frictionally together in order to maintain the inclination imposed between them and thus on the front part.

4,367,930

SOUND REPRODUCTION METHOD AND APPARATUS

Frederick J. Kolb, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 23, 1981, Ser. No. 246,497
Int. Cl.³ G03B *31/02*
U.S. Cl. 352—27 **15 Claims**



1. Optical sound reproduction apparatus for producing sound-related signals from radiation modulated by an optical sound track, the sound track including areas of density preferentially absorptive in a visible region of the spectrum, said apparatus comprising:

means for illuminating said optical sound track with radiation within said visible region of the spectrum to thereby provide radiation that is modulated by the density areas in the optical sound track;

means for converting at least a portion of said modulated radiation in said visible region into modulated radiation nearer to the infrared region of the spectrum; and

photoreceptive means preferentially responsive to said modulated radiation nearer to the infrared region of the spectrum for generating signals representative of the density areas in the optical sound track.

4,367,931

ELECTROMAGNETICALLY DRIVEN DIAPHRAGM DEVICE

Tohru Kawai, Kawasaki, and Makoto Masunaga, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1980, Ser. No. 187,742
Claims priority, application Japan, Sep. 17, 1979, 54-119047
Int. Cl.³ G03B *7/095, 9/07*
U.S. Cl. 354—23 D **7 Claims**

1. An electromagnetically operated diaphragm device for a lens assembly comprising:

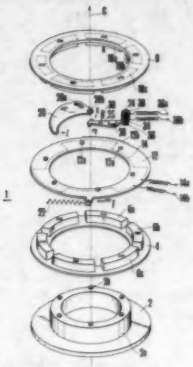
(A) an electromagnetic unit including:

(a) two sets each having a plurality of magnet members arranged circularly around an optical axis within said lens assembly, the members in each set having poles, the poles of one set facing opposite poles of the other set;

(b) a rotary member arranged in a space between said two circles of magnet members and carrying a coil having portions extending in directions relative to the magnet members to produce rotary movement of the rotary member in response to current through the coil; and

(c) diaphragm blades positioned between said magnet members and said rotary member, said diaphragm blades being pivoted on said rotary member and forming a variable aperture depending upon the position of rotation of said rotary member; and

(B) diaphragm blade stopping means for stopping movement of said diaphragm blades due to the rotation of said rotary



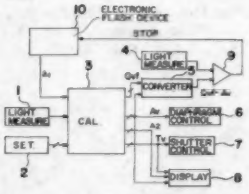
member, said diaphragm blade stopping means stopping said rotary member from further rotation so that the size of the aperture opening defined by said diaphragm blades is adjusted to a given value.

4,367,932

EXPOSURE CONTROL SYSTEM

Norio Ishikawa, Osaka; Nobuyuki Taniguchi, Sakai, and Yoshio Yuasa, Kawachinagano, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 21, 1980, Ser. No. 199,211
Claims priority, application Japan, Oct. 23, 1979, 54-137210; Jan. 8, 1980, 55-1203; Jan. 9, 1980, 55-1548
Int. Cl.³ G03B *7/097, 7/16*
U.S. Cl. 354—23 D **37 Claims**



1. An exposure control system for a photography operation under an ambient light and a flash light, said system comprising:

first means for controlling an exposure time;

second means for controlling an aperture size;

third means for controlling an amount of flash light to be emitted;

means for measuring an intensity of the ambient light;

means for setting a film sensitivity and two of the exposure time, the aperture size and the flash light amount to govern the corresponding two of the three control means;

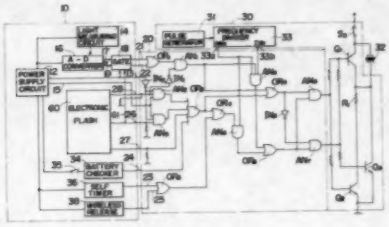
means for calculating the other of the exposure time, aperture size and the flash light amount in response to said measuring means and said setting means; and

means for governing the other of said controlling means in response to said calculating means.

4,367,933
AUDIBLE INDICATION DEVICE FOR CAMERAS

Masayoshi Sahara, Sennan, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 1, 1980, Ser. No. 211,906
Claims priority, application Japan, Dec. 6, 1979, 54-169416[U]
Int. Cl.³ G03B 15/05, 17/18; G08B 23/00
U.S. Cl. 354—23 D 9 Claims

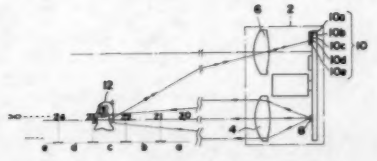


1. An audible indication device for a camera comprising:
a sound generator for generating sound;
means for driving said sound generator;
a first signal generator for generating a first indication signal representative of information to be recognized in the proximity of the indication device;
a second signal generator for generating a second indication signal representative of information to be recognized remotely from the indication device; and
sound control means connected to said first and second signal generator for determining which signal generator generates a signal and said driving means including means to change the volume of the sound to be generated by said sound generator in accordance with the output of said sound control means such that the sound generated by said sound generator differs depending on which indication signal is generated.

4,367,934
CAMERA WITH AN AUTOMATIC FOCUSING DEVICE

Toora Matsui, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP81/00002, § 371 Date Jul. 22, 1981, § 102(e) Date Jul. 22, 1981, PCT Pub. No. WO81/02067, PCT Pub. Date Jul. 23, 1981
PCT Filed Jan. 7, 1981, Ser. No. 285,114
Claims priority, application Japan, Jan. 9, 1980, 55-1265[U]
Int. Cl.³ G03B 3/10, 13/20
U.S. Cl. 354—25 4 Claims

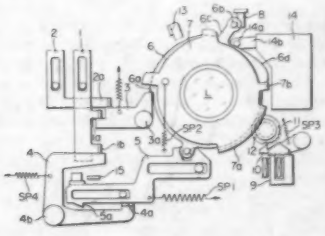


1. In a camera with an automatic focusing device which detects a distance to a target object by a plurality of light receiving elements receiving a light projected from a light source towards the target object and reflected from the target object, and which can vary the distance being focused by a picture taking optical system, said camera comprising:
change-over means for setting said picture taking optical system selectively to an ordinary photography condition wherein the distance to be focused thereby is variable within a given range, and to a close-up photography condition wherein the distance to be focused is fixed to a value outside of said given range;
first light emission control means for actuating a light emitting element light source to emit a light pulse only once;
second light emission control means for actuating said light emitting element to successively emit light pulses;
a detector means for detecting the output of each of said light receiving elements;
a focusing means capable of changing, in response to the output of said detector means, the distance to be focused by said picture taking optical system; and
an indication means for indicating, in response to the output of said detector means, that said target object is at the position corresponding to the given fixed distance to be focused by said picture taking optical system, said automatic focusing device being constructed such that said first light emission control means and said focusing means are operable with said picture taking optical system being set to said ordinary photography condition by said change-over means, and said second light emission control means and said indicator means are operable with said optical system being set to said close-up photography condition.

4,367,935
CAMERA EQUIPPED WITH AN AUTOMATIC FOCUS ADJUSTING DEVICE

Takao Kuge, and Takeshi Ohta, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Continuation of Ser. No. 974,110, Dec. 27, 1978, abandoned.
This application Dec. 30, 1980, Ser. No. 221,921
Claims priority, application Japan, Dec. 29, 1977, 52-160883
Int. Cl.³ G03B 7/08
U.S. Cl. 354—25 4 Claims



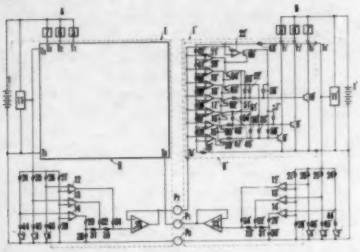
1. A camera equipped with an automatic focus adjusting device including ranging means, said camera comprising: mean (6) adapted to trigger a shutter release means (13) which moves in accordance with focusing operations of said camera, said shutter release means (13) being disposed on the moving path of said trigger means (6), an actuating member (1) adapted to actuate said shutter release means (13), and stop means (4) adapted to temporarily and forcedly stop said trigger means (6) at a position before said trigger means (6) reaches said shutter release means (13), and said actuating member (1), stop means (4) and trigger means (6) being arranged in such a fashion that, after the completion of each focusing operation, said stop means (4) is released, said trigger means (6) is caused again to move toward said shutter release means (13) and the shutter is finally released by said shutter release means (13).

4,367,936

SWITCHING CONTROL SYSTEM

Toshikazu Ichiyanagi, Mitaka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 105,033, Dec. 19, 1979, Pat. No. 4,320,518. This application Jun. 16, 1981, Ser. No. 274,304
Claims priority, application Japan, Dec. 28, 1978, 53-165845
Int. Cl.³ G03B 1/00
U.S. Cl. 354—173 9 Claims



1. A switching control system comprising:

a plurality of operation switch members disposed within a first device, each of said switch members being arranged to be operated to perform a switching action independently of other switch members;

voltage generating means disposed within said first device, said means being arranged to generate a plurality of different voltage levels in accordance with combinations of the switching actions performed by said plurality of operation switch members;

electrical connection means for introducing the output of said voltage generating means to a control circuit disposed within a second device, said electrical connection means being a contact and/or a lead wire;

a plurality of switching means disposed within said second device, each of said switching means being arranged to actuate one of the circuit means corresponding thereto, said circuit means being disposed also within said second device; and

said control circuit disposed within said second device, said control circuit being arranged to receive the output voltage of said voltage generating means through said electrical connection means and said control circuit being arranged to selectively actuate one or more than one of said plurality of switching means in accordance with the voltage received.

4,367,937

MOTOR DRIVEN CAMERA

Yukio Mashimo, Tokyo, and Tomonori Iwashita, Huchu, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 888,469, Mar. 20, 1978, abandoned. This application Oct. 3, 1979, Ser. No. 81,334
Claims priority, application Japan, Mar. 24, 1977, 52-32492; Apr. 11, 1977, 52-41094
Int. Cl.³ G03B 1/18, 7/26
U.S. Cl. 354—173 9 Claims

6. A camera with an electric drive device comprising:

first power source means for producing a voltage;

an exposure control circuit connected to the first power source means;

first switch means for switching between a closed position and an open position, said first switch means supplying power from the first power source means to the exposure control circuit when said first switch means is closed and inhibiting power when said first switch means is opened;

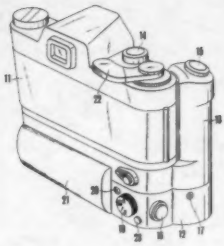
second switch means for switching the exposure control circuit off when it is opened and switching the exposure control circuit on when it is closed;

second power source means for supplying a higher voltage than the first power source means;

an electric driving control circuit connected to the second power source means;

accumulating means for charging from the first power source means when the first switch means is opened and for discharging when the first switch means is closed;

a first transistor for being turned on by the discharge of the accumulating means;



a second transistor for being turned on by the turning-on of the first transistor, said second transistor forming a self-holding circuit together with the first transistor, and

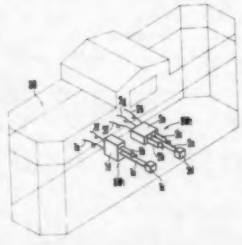
a third transistor having a base for receiving the output of the second transistor, having an emitter connected to the second switch means, having a collector connected to the electric driving control circuit, for turning on when the second switch means is closed and for turning off when the second switch means is opened, so as to control the operation of the electric drive control circuit.

4,367,938

ELECTROMAGNETICALLY DRIVEN SHUTTER

Syozo Yoshida, Machida, and Syuichiro Saito, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Japan

Continuation of Ser. No. 213,918, Dec. 8, 1980, abandoned. This application Aug. 21, 1981, Ser. No. 295,013
Claims priority, application Japan, Dec. 7, 1979, 54-169606
Int. Cl.³ G03B 9/62
U.S. Cl. 354—234 8 Claims



1. An electromagnetically driven shutter including:

(a) at least one shutter blade member; a photographic light path is opened and closed by the displacement of said member;

(b) an electromagnetic drive member; said member comprises a permanent magnet and a conductor member provided in the magnetic field of said permanent magnet;

(c) a current supply control circuit; said circuit performs supply of a predetermined amount of current to the above-described conductor member in a predetermined direc-

tion, whereby an electromagnetic force of predetermined magnitude is exerted between the permanent magnet and the conductor member in the above-described electromagnetic drive member, causing the shutter blade member to move across the photographic light path at a predetermined speed; and

(d) means for detecting the relation between the running direction and the gravity direction of the shutter blade member;

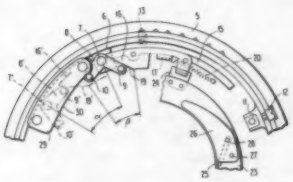
wherein the amount of current supplied to the above-described conductor member is controlled by the current supply control circuit in accordance with the signal produced from said posture detecting means, whereby, as the relationship between the direction of the movement of the shutter blade and the direction of the gravity changes, even when the load on the electromagnetic drive member is increased or decreased, the driving torque of said electromagnetic drive member is increased or decreased in a direction to compensate this so that the speed of movement of the above-described shutter blade is maintained to the predetermined speed.

4,367,939

AUTOMATIC APERTURE PRESETTING DEVICE

Zenichi Okura, Ichikawa, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 24, 1981, Ser. No. 276,743
Claims priority, application Japan, Jul. 15, 1980, 55-99388[U]
Int. Cl.³ G03B 9/07
U.S. Cl. 354—272 **4 Claims**



1. An automatic aperture presetting device for a camera lens comprising: a preset ring which is rotatable around an optical axis of said lens; a crank-shaped lever pivotally mounted on said preset ring, said crank-shaped lever having first and second arms; a stationary lens barrel; a cam mounted on said stationary lens barrel; an aperture operation ring adapted to be driven from a camera body side for setting an automatic aperture value corresponding to a set position of said preset ring, a stop member being formed integrally with said aperture operation ring; wherein an end of said first arm of said lever is in abutment with an edge of said cam mounted on said stationary lens barrel and an end of said second arm is operatively coupled to said stop member.

4,367,940

CHEMICAL APPLICATION AND DEVELOPER APPARATUS FOR LITHOGRAPHIC PLATE PROCESSOR

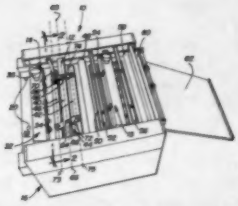
Milam E. Mart, P.O. Box 29, Carrollton, Tex. 75006

Filed Jun. 16, 1980, Ser. No. 159,639
Int. Cl.³ G03D 5/06
U.S. Cl. 354—317 **18 Claims**

1. A developer apparatus for use in a lithographic plate processor comprising:

a pair of rectangularly shaped developer spreading members positioned on opposite sides of a predetermined line extending generally transverse to the direction of motion of a lithographic plate traveling through the processor, the length of each spreading member in the transverse direction being slightly less than the width of the lithographic plate in the transverse direction, each spreading member further positioned for engagement with the exposed surface of the lithographic plate;

a plurality of cross piecs for mounting said spreading members on the processor so that the medial axis of each spreading member in its elongate direction is parallel said predetermined line, said plurality of cross pieces permitting said spreading members to pivot about axes centered on said predetermined line and on a line parallel said predetermined line at a distance at least equivalent to the



separation between the medial axis of each spreading member and said predetermined line so that said spreading members may oscillate over the exposed surface of the lithographic plate to uniformly spread developer thereon, said plurality of cross pieces forming parallel linkages; and

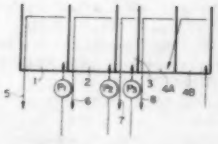
means to oscillate said spreading members in both directions about a central position where the spreading members are most distant from said predetermined line so that a portion of each spreading member extends over the edge of the lithographic plate at the limits of oscillation.

4,367,941

APPARATUS FOR SILVER RECOVERY DURING PHOTOGRAPHIC PROCESSING

Kazushige Uenaka; Shinichi Kashiwagi; Toshiro Tahara; Kazuo Shirasu, all of Minami-ashigara; Yoshio Usui, Tokyo; Akira Abe, Tokyo; Fumio Nakagawa, Tokyo, and Tetsuya Masuda, Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 148,608, May 12, 1980, Pat. No. 4,343,892. This application Aug. 5, 1981, Ser. No. 290,042
Claims priority, application Japan, May 11, 1979, 54-58300
Int. Cl.³ G03D 3/02
U.S. Cl. 354—324 **4 Claims**



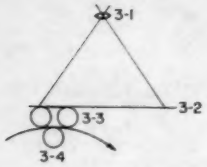
1. An apparatus for recovering silver during photographic processing by collecting a silver-containing photographic processing fluid carried by photographic materials transported from a processing tank containing a silver-containing processing fluid, said apparatus comprising a silver recovery tank interposed between the processing tank containing said silver-containing processing fluid and a water wash tank, wherein said processing tank and said silver recovery tank are each provided with an independently regulated replenishing fluid supply pump and an overflow pipe, whereby said tanks may be provided with replenishing fluid and drained of excess fluid, wherein said replenishing fluid supplied to said silver recovery tank is determined by the amount of said photographic materials introduced to said processing tank.

4,367,942

XEROGRAPHIC COPYING MACHINE

Shuichi Ohtsuka, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 25, 1981, Ser. No. 247,491
Claims priority, application Japan, Mar. 26, 1980, 55-38407
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 R **8 Claims**



1. A xerographic copying machine comprising:
a stationary exposure optical system for projecting an optical image to be copied;
a xerographic photosensitive element having a photosensitive surface;
means for moving said photosensitive element in a plane parallel to a plane in which said optical image is formed while simultaneously moving said photosensitive surface of said element in such a manner that the relative linear velocity of a point on said surface of said photosensitive element and said optical image projected by said optical system in a plane parallel to said plane in which said image is formed is substantially zero; and
an image transferring mechanism confronting said surface of said photosensitive element for conveying an image transfer medium in such a manner that the relative linear velocity of said image transfer medium and a point on said surface of said photosensitive element in a plane parallel to said plane in which said image is formed is substantially zero to transfer an image formed on said surface of said photosensitive element to said image transfer medium, said photosensitive element comprises an endless belt having a photosensitive surface.

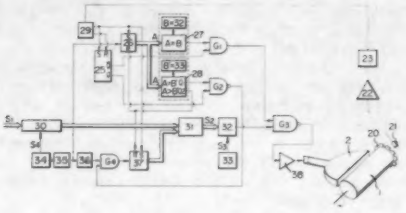
4,367,943

APPARATUS FOR PROVIDING RECORDING COMPENSATION FOR ROTATING DRUM SPEED FLUCTUATIONS IN AN INFORMATION RECORDING APPARATUS

Hiroya Nakamura, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 17, 1981, Ser. No. 244,630
Claims priority, application Japan, Mar. 21, 1980, 55/34729; Apr. 25, 1980, 55/54371
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 R **1 Claim**

1. An apparatus for recording information on a recording member, comprising:
a movable image forming member;
a character generator for generating character signals corresponding to information sequentially input thereto;
means for forming an electrostatic latent image on said image forming member in accordance with the character signals generated by said character generator, said image forming means being operable to form images on said image forming member by line-by-line scanning of said member with the character signals;
means for generating a train of pulses related in number to the number of lines of information to be recorded on the recording medium as said image forming member moves a predetermined distance;
means for causing said character generator to generate a character signal each time it receives a pulse from said pulse generating means; and
means for continuing to supply the last scanning portion of said character signals from said character generator to said image forming means when said last scanning portion of the character signals is completed earlier in time than the arrival of the trailing edge of a corresponding one of



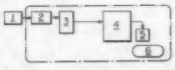
said pulses at said means for causing the generation of a character signal, and for preventing the supply of said last scanning portion of said character signals from said character generator to said image forming means when said last scanning portion of the character signals is not completed by the time of arrival of the trailing edge of a corresponding one of said pulses at said means for causing the generation of a character signal.

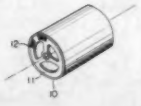
4,367,944

CHARGING POTENTIAL CONTROL MEANS FOR ELECTROPHOTOGRAPHIC COPIERS

Hiroshi Kuru, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Feb. 13, 1981, Ser. No. 234,410
Claims priority, application Japan, Feb. 19, 1980, 55-20497[U]
Int. Cl.³ G03G *15/00, 15/02*
U.S. Cl. 355—14 CH **3 Claims**



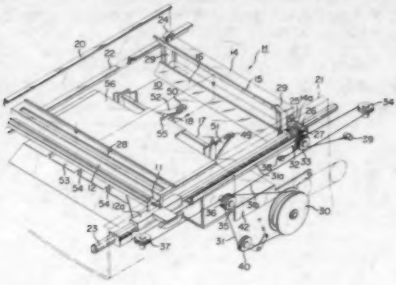


1. In a copying apparatus in which an electrostatic latent image is formed on a photosensitive member on whose surface an electric potential has been generated, the improvement comprising means applying an electric charge to the surface of the photosensitive member, means forming an indicia on said member representing the optimum charging potential characteristics of the photosensitive substance on said member, and means controlling said electric charge in accordance with said indicia.

4,367,945
SLIT EXPOSURE OPTICAL SYSTEM FOR AN ELECTROPHOTOGRAPHIC COPYING APPARATUS

Tadashi Abe, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Apr. 22, 1981, Ser. No. 256,559
Claims priority, application Japan, Apr. 30, 1980, 55-58207
Int. Cl.³ G03B 27/48, 27/50, 27/70
U.S. Cl. 355—51 **2 Claims**

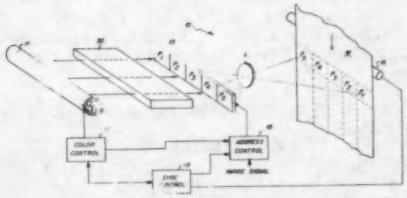


1. A slit exposure optical system for an electrophotographic copying apparatus comprising a first movable carriage equipped with a light source and a first mirror, a projection lens, a second movable carriage equipped with a second mirror guiding light reflected from said first mirror to said projection lens, a wire sheave device to reciprocate said first and second movable carriages toward and away from one another, compressible elastic means between said carriages to absorb the impact energy between the two at their final step of movement toward one another, said wire sheave device including a drum, a wire actuated thereby to drive said second movable carriage at a speed over that of said first movable carriage, and means interconnecting said wire to said carriages to effect elongation of the same and thereby absorb the impactive force caused by their stoppage.

4,367,946
LIGHT VALVE IMAGING APPARATUS HAVING IMPROVED OPTICAL CONFIGURATION

Jerry R. Varner, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 29, 1981, Ser. No. 230,089
Int. Cl.³ G03B 27/72
U.S. Cl. 355—71 **6 Claims**

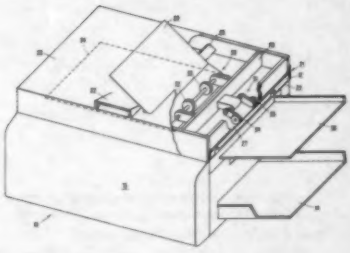


1. In electronic imaging apparatus having a linear imaging zone and including: (1) a linear light valve array having a plurality of electro-optic pixel portions with light ingress surfaces, (2) illuminating means for directing illumination toward said imaging zone via said light valve array generally uniformly from a linear region parallel to said array and said imaging zone and (3) addressing means for applying discrete electric fields to pixel portions of said light valve array in accordance with an image pattern, the improvement comprising light regulating means, located in alignment between said illuminating means and said light valve array and including a linear light baffle aligned in generally parallel relation with said illuminating means and having walls defining a plurality of light passages with their respective axes substantially normal to the ingress surfaces of said light valve array for passing light from said illuminating means that is directed substantially normal to the ingress surface of said light valve array and blocking light from said illuminating means that is not directed substantially normal to said ingress surface.

4,367,947
DOCUMENT FEEDER FOR MOVING BED MACHINES SUCH AS COPIERS

Nelson K. Arter, Longmont; William C. Dodt, Broomfield, and Charles A. Farel, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 20, 1981, Ser. No. 265,518
Int. Cl.³ G03B 27/62
U.S. Cl. 355—75 **22 Claims**



1. In a machine such as a copier having a carriage which moves in a reciprocal manner so that a surface thereof passes over a station where an operation is performed relative to a document or the like, a document feeder comprising:

means forming a nip with said carriage surface and for applying a force at said nip in a normal direction towards said carriage surface, and

guide means positioned for directing the leading edge of a document into said nip between said nip forming means and said carriage surface so that movement of said carriage causes a document at said nip to be held against said carriage surface by said normal force and to be carried by said carriage across said station.

4,367,948
SURFACE POTENTIAL ELECTROMETER AND IMAGE FORMING APPARATUS USING THE SAME

Koji Suzuki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 21, 1980, Ser. No. 141,885
Claims priority, application Japan, Apr. 24, 1979, 54-51141; Apr. 28, 1979, 54-52632; Apr. 28, 1979, 54-52633; May 8, 1979, 54-56536; Jun. 25, 1979, 54-79860; Jul. 10, 1979, 54-87118
Int. Cl.³ G03G 15/00
U.S. Cl. 355—14 D **59 Claims**

1. An image forming apparatus, comprising:

a recording member;

means for forming an electrostatic latent image on said recording member;

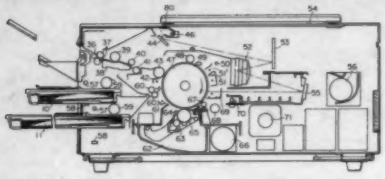
means for developing said electrostatic latent image;

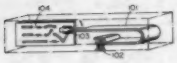
detecting means for detecting the surface potential of said recording member;

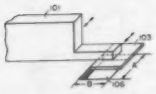
control means for controlling said latent image forming means or developing means in response to the output from said detecting means;

support means for supporting said recording member and said surface potential detecting means; and

connecting means for electrically connecting said detecting means and said control means, said connecting means







being removably mounted on said support means, and the electrical connection between said detecting means and said control means being made or broken according to whether said detecting means is attached to or detached from said supporting means.

4,367,949

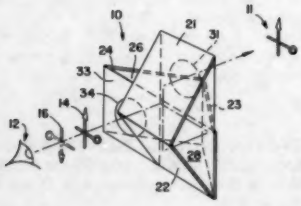
AIMING METHOD AND MEANS

Gordon R. Lavering, 4111 Skymont Dr., Belmont, Calif. 94002

Filed Jun. 2, 1980, Ser. No. 155,414

Int. Cl.³ G01C *3/00*

U.S. Cl. 356—144 **11 Claims**



1. An aiming device comprising:

a. first aperture means providing a first normal upright field of view;

b. second aperture means providing a second normal upright field of view, said first and said second aperture means being fixedly mounted with respect to each other with said first and said second fields of view in mutually overlapping relationship; and

c. means superimposing said second field of view on said first field of view in inverted and reversed relation thereto comprising a hollow first porro-prism having a partial mirror as one of its reflective surfaces and a second porro-prism mounted at right angles to said hollow first porro-prism with one reflective surface of said second porro-prism in opposition to the other reflective surface of said hollow first porro-prism, said partial mirror of said hollow first porro-prism being in opposition to said first aperture means and said second aperture means being in opposition to the free reflective surface of said second porro-prism.

4,367,950

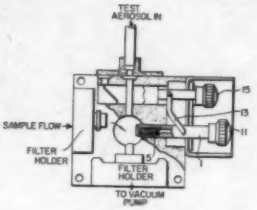
COMBINED AEROSOL MONITOR AND CALIBRATEABLE LIGHT RAY SCATTERING REFERENCE ROD

Jerry J. Klug, Rosemount, Minn., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Dec. 24, 1980, Ser. No. 219,704

Int. Cl.³ G01N *21/53*

U.S. Cl. 356—338 **2 Claims**



1. An adjustable removable light scattering rod in combination with a light scattering aerosol monitor comprising:

a monitor for measuring the concentration of an aerosol;

an elongated light transmitting hollow rod member having an internal threaded portion at least along part of the hollow interior wall thereof, said rod being removably mounted in the monitor and capable of being movable when mounted to intersect the aerosol concentration being monitored; and

a movable calibration light intensity reducing slug with external threads thereon and complementary shaped to engage the threads of the rod member, said slug being mounted in the rod and axially adjustable with respect to the rod by moving its threads with respect to those of the rod whereby the slug and rod can be calibrated against a known sample aerosol concentration for the monitor which calibration can be used as a field check at a later time for the monitor.

4,367,951

PROCESS AND APPARATUS FOR THE SURFACE ANALYSIS OF FLEXIBLE MATERIALS

Fritz Hammon, Frankenthal, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 8, 1980, Ser. No. 213,794

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1980, 3001881

Int. Cl.³ G01B *9/02*

U.S. Cl. 356—357 **5 Claims**

1. A process for the analysis of the surface character of a web of flexible material, said process comprising:

placing the surface portion to be examined against a reflecting reference surface,

directing a light beam at an angle onto said surface portion such that the light beam is reflected partially from said surface portion and partially from the reference surface,

superposing the resulting partial beams so that a pattern of interference bands corresponding to the surface profile of said portion is formed,

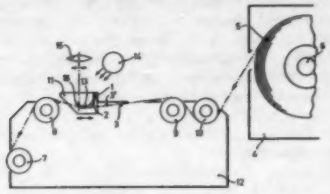
evaluating the interference pattern on the basis of the inter-

ference band spacings and the wave length of the incident light,

advancing the web of material so that said surface portion extends, at a location outside the range of said reference surface, in a plane inclined to the optical axis at an angle of from 80 to 45 degrees,

examining the surface portion in said location with the direction of incidence of the light beam selected so that the incident light beam is reflected in the direction of the optical axis from a predetermined surface element which is anti-parallel to said plane, and

determining from such examination the overall pattern of the surface profile, using the brightness distribution of the observed surface field to distinguish protrusions from recesses on said surface.

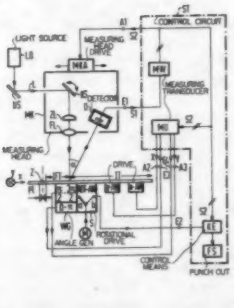


4,367,952

CENTERING DEVICE FOR THE MANUFACTURE OF A CENTER HOLE IN DISKS

Harald Ahrens, and Dieter Schulz, both of Hanover, Fed. Rep. of Germany, assignors to Polygram GmbH, Fed. Rep. of Germany

Filed Mar. 30, 1981, Ser. No. 248,686
Int. Cl.³ G01B *11/00*
U.S. Cl. 356—400 10 Claims



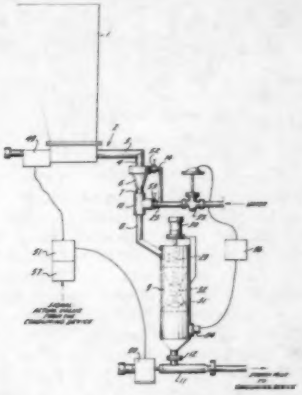
1. A centering device for the manufacture of a center hole in disks having spiral informational tracks at an information portion surrounding an information-free center portion, comprising: a measuring head means for emission of a light beam onto an x-y disk plane surface of the disk and which further includes a detector means for reception of radiation occurring through use of a light diffraction characteristic at the informational tracks; displacement means for displacing the measuring head means and the disk to be centered relative to one another in planes which are mutually parallel; said measuring head means focusing the light beam in a substantially perpendicular beam direction onto the surface of the disk; rotating means for rotating the disk in the x-y disk plane; said displacement means displacing the measuring head means relative to the disk in a radial direction in such manner that the light beam is precisely situated on a boundary between the information portion and the information free portion during a full disk revolution; and control circuit means connecting to said measuring head means, displacement means, and rotating means for movement control of the displacement means and rotating means and identification of a center of the disk.

4,367,953

APPARATUS FOR THE CONTINUOUS PREPARATION OF STARCH MILK

Gerhard Hinz, Kranenburg-Nutterden, and Joseph Dinessen, 4193 Kranenburg-Frasselt, both of Fed. Rep. of Germany, assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Nov. 6, 1980, Ser. No. 204,407
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1979, 2945361
Int. Cl.³ B01F *15/02*
U.S. Cl. 366—132 21 Claims



1. An apparatus for the continuous preparation of starch milk, which apparatus comprises:

(1) a dosing means for supplying dry starch from a storage source through a downward outlet opening,

(2) an homogenizing unit adapted to receive said starch, and further comprising:

(a) an upper in-flow hopper having

(i) an annular upper member, p2 (ii) a hopper member depending from said annular upper member and disposed vertically below said outlet of said dosing means, said hopper member having a conical interior surface tapering inwardly from said annular upper member to a lower opening; and,

(iii) a flushing means in communication with said annular upper member and adapted to provide a continuous film of water onto the interior surface of said hopper,

(b) a fall pipe section in communication with the lower opening of said hopper member and extending generally downward,

(c) a lower section disposed at the lower terminus of said fall pipe and directly in communication therewith, which lower section comprises:

(i) a homogenizing tank, capable of holding a quantity of prepared starch milk

(ii) an agitating means disposed within said homogenizing tank and capable of keeping stored starch milk in a state of agitation,

(iii) means to indicate the levels of starch milk in said tank, and

(iv) an outlet adapted to provide prepared starch milk to a consuming device.

4,367,954

DEVELOPING DEVICE FOR COPIER

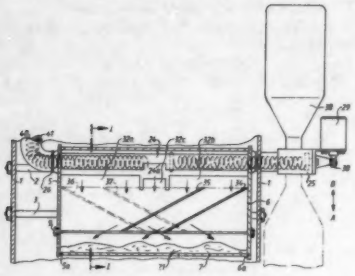
Alfred Ganz, Gröbenzell; Karl Hartwig, Unterhaching; Christoph Jung, Munich; Günther Schmall, Eching; Erich Schlick, Unterschleissheim, and Jürgen Vossnacke, Hohenschäftlarn, all of Fed. Rep. of Germany, assignors to Baldwin Piano & Organ Company, Cincinnati, Ohio

Filed Jan. 9, 1981, Ser. No. 223,722

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1980, 3010647

Int. Cl.³ B01F *15/02*

U.S. Cl. 366—156 8 Claims



1. In a developer device for electrostatic copiers, in which toner is circulated during the developing operation, a combination comprising an elongated housing; means forming two mixing channels extending lengthwise of said housing; means for gravity-discharging toner at a predetermined location in said housing substantially midway of the elongation of said channels; and guide surfaces for the discharged toner arranged in said channels and inclined lengthwise of the same and relative to the direction of gravity discharge of the toner, each of said channels comprising a pair of said guide surfaces which are both inclined in one and the same direction, one guide surface of each pair extending from the region of an outer end of the first quarter of the length of the respective channel to the vicinity of a juncture between the second and third quarters of the length, and the other guide surface of the pair extending from the vicinity of a juncture between the first and second quarters of the length to the vicinity of a juncture between the third and fourth quarters of the length of the respective channel.

4,367,955

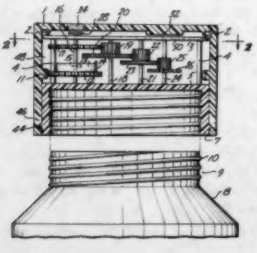
MEDICAMENT CONTAINER WITH TIMER TOP

Donald H. Ballew, 1908 W. Yakima, Yakima, Wash. 98902

Filed May 13, 1980, Ser. No. 149,492

Int. Cl.³ G04B *47/00*

U.S. Cl. 368—10 3 Claims



1. A timing and alarm device for signalling a medicine user at the prescribed time for self-administration of medicine from a medicine container, comprising:

a medicine container means having attachment means thereon for receiving and holding a cap;

a cap for said container means having a timing and alarm signalling means therein, said timing and alarm signalling means being activated to time then signal a predetermined elapsed time by means initiated by relative rotation between said container and said cap; said cap having winding means pivotally mounted on a first shaft means, said winding means operatively connected to a timer mainspring means and mounted in said cap for engagement with said container means, whereby rotation of said cap with respect to said container means applies torque to wind said mainspring for operating said timer and alarm signalling means.

4,367,956

CLOCKWORK OF AN ELECTRIC QUARTZ CLOCK

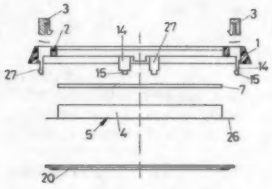
Friedrich Windstey, Gerichtsgasse 1/5/7, A-1210 Wien, Austria

Filed Aug. 21, 1980, Ser. No. 180,086

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1980, 3024702

Int. Cl.³ G04B *29/00*; H04M *1/21*

U.S. Cl. 368—88 10 Claims



1. An electric quartz clock comprising:

a clockwork having a generally cylindrical body provided with a flat contact ring encompassing a rear part of said body;

a housing surrounding said clockwork and having a front cover provided with a viewing window, said housing being provided with a plurality of peripherally spaced rearwardly extending detents having inwardly pointing catches releasably engaging an outer rim of said contact ring for holding said clockwork centered in said housing;

coupling means on an inner rim of said contact ring releasably connecting same with said clockwork;

a plurality of pushbuttons disposed in a peripheral zone of said front cover overlying said contact ring; and

a plurality of resilient contact members connected to said clockwork and disposed above said contact ring for depression by respective pushbuttons into conductive engagement therewith to close respective control circuits.

4,367,957

TIME-LAPSE INDICATOR OR THE LIKE

Robert F. Bradley, New Buffalo, Mich., assignor to Micro-Circuits Company, New Buffalo, Mich.

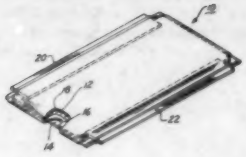
Division of Ser. No. 928,788, Jul. 28, 1978, Pat. No. 4,206,838. This application Dec. 6, 1979, Ser. No. 100,840

Int. Cl.³ G01D *11/00*; G07F *1/06*; G04F *8/00*

U.S. Cl. 368—114 16 Claims

1. A mechanism for activating a time-lapse indicator utilizing electrical or magnetic characteristics and having a layer containing fluid material with numerous discrete particles and a layer of absorbent material in close proximity to said first layer, separated therefrom by a frangible layer: said activating mechanism including a means for flexing said frangible layer to cause said layer to break into numerous pieces, thereby releasing the liquid in said fluid material to be absorbed by said

absorbent material and thereby changing said characteristics of one of said layers, and means for feeding the indicator to said



flexing means when the operation of the indicator is to be initiated.

4,367,958

CORRECTION SIGNAL GENERATING SYSTEM FOR AN ELECTRONIC TIMEPIECE

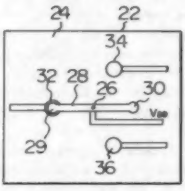
Hisashi Kawahara; Tadashi Hanaoka, and Masamichi Yamauchi, all of Tanashi, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Jul. 15, 1980, Ser. No. 169,066

Claims priority, application Japan, Jul. 17, 1979, 54-90808; Aug. 31, 1979, 54-111295

Int. Cl.³ G04C 9/00

U.S. Cl. 368—188 **7 Claims**



1. A correction signal generating system for an electronic timepiece having a rotatable crown, comprising;

a correction switch having a switch rotor comprising a plurality of movable contacts fixedly attached to said switch rotor concentrically about the axis of rotation thereof, disposed at equidistant angular spacings from one another such as to be rotated by said switch rotor within a common plane of rotation which is normal to said axis of rotation of the switch rotor, said correction switch further comprising a plurality of fixed contacts disposed concentrically about said axis of rotation of the switch rotor at equidistant angular distances from one another within a common plane which is normal to said axis of rotation, said fixed contacts being positioned to be successively contacted by said movable contacts as said switch rotor is rotated, the number of said fixed contacts and the number of said movable contacts being selected such as to have no common divisor other than one therebetween, said switch rotor being coupled to said crown to be rotated thereby;

an electrical power source connected to said switch for generating a switching signal from each of said fixed contacts in response to contact therewith by one of said movable contacts;

a switch bounce prevention circuit comprising a plurality of latch circuits, with each of said latch circuits being coupled to a corresponding one of said fixed contacts such as to be placed in a set condition and to thereby produce an output signal, in response to one of said switching signals appearing on said corresponding one of the fixed contacts, each of said latch circuits being further coupled to all of said fixed contacts other than said corresponding one of the fixed contacts such as to be place in a reset condition, thereby inhibiting generation of said output signal, in response to a switching signal appearing on any of said fixed contacts other than said corresponding one of the fixed contacts; and

a direction detection circuit coupled to receive said output signals from said switch bounce prevention circuit, and responsive to generation of said output signals in a first predetermined sequence due to said crown being rotated in a first direction of rotation for producing a first correction signal, said first correction signal being operative to advance time information which is displayed by said electronic timepiece, and further responsive to generation of said output signals from the switch bounce prevention circuit in a second predetermined sequence, due to said crown being rotated in a second direction of rotation, for generating a second correction signal, said second correction signal being operative to retard said time information displayed by said electronic timepiece.

4,367,959

PSEUDO-ANALOG DISPLAY DEVICE

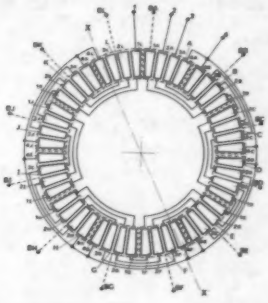
Fridolin Wiget, Neuchatel, Switzerland, assignor to Ebauches, S.A., Switzerland

Filed Sep. 5, 1980, Ser. No. 184,316

Claims priority, application Switzerland, Sep. 7, 1979, 8071/79

Int. Cl.³ G04C 17/02; G09F 9/00

U.S. Cl. 368—240 **1 Claim**



1. In an electronic time piece, the improvement of a display device including a first ring of only forty-eight electrodes arranged in twelve groups of four electrodes each, the first, the second, the third, and the fourth electrode in each group being respectively connected to the fourth, the third, the second and the first electrode in both the adjacent groups, a second ring of twelve counter-electrodes disposed each in a facing relationship with one of said groups of four electrodes, and a display medium disposed between said first and said second ring.

4,367,960

WATCH CASE ASSEMBLY

Theodore E. Lisnow, Sands Point, N.Y., assignor to Lisnow & Weiss Co, Inc., Long Island City, N.Y.

Filed Mar. 30, 1981, Ser. No. 249,239

Int. Cl.³ G04B 37/00

U.S. Cl. 368—309 **7 Claims**

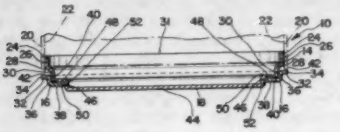
1. A watch case assembly comprising:

a. a main casing of substantially ring-like configuration open at the bottom and having peripheral side walls which define an open center chamber;

b. a movement retaining ring snuggly received within said side walls adjacent the bottom end thereof;

c. a rear wall retaining ring attached to the bottom portion of said movement ring having an outwardly extending flange portion in engagement with the rear portion of said main

casing and an inwardly extending flange portion which extends inwardly of said movement ring; and



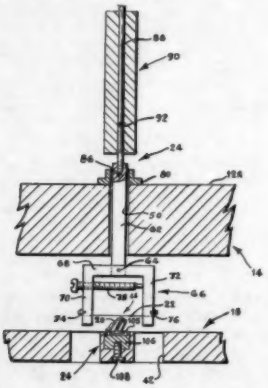
d. a rear wall attached to said inward flange portion extending across the open bottom of said assembly.

4,367,961

THERMAL MEASURING APPARATUS FOR ELASTOMERS

Warren R. Griffin, Kettering, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 30, 1980, Ser. No. 221,185
Int. Cl.³ G01N 3/24, 3/18
U.S. Cl. 374—46 **20 Claims**



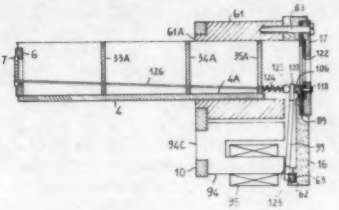
1. An apparatus for measuring the tear strength of an elastomer specimen comprising a housing; means situated within said housing for fixedly supporting said elastomer specimen; means situated within said housing in operable relationship to said elastomer specimen for applying a predetermined amount of force to said elastomer specimen, said force applying means including a movable element, a thin wire secured to one end of said movable element, and means secured to the other end of said movable element for applying a preselected amount of load on said movable element; means operably connected to said housing for controlling the temperature of said elastomer specimen; and means connected to said force applying means for determining the resistance of said elastomer specimen to the application of said predetermined force whereby upon the application of said load on said movable element said thin wire is capable of passing through said elastomer specimen and said tear strength of said elastomer can be measured with respect to a variation in the temperature of said elastomer specimen.

4,367,962

MOSAIC PRINTING HEAD

Angelo Gaboardi, Pregnana Milanese, Italy, assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Mar. 3, 1981, Ser. No. 240,042
Claims priority, application Italy, Feb. 18, 1980, 20717 A/80
Int. Cl.³ B41J 3/12
U.S. Cl. 400—124 **2 Claims**



1. A mosaic printing head adapted to be mounted on a printing carriage for providing an impression against a platen, including a needle guiding assembly having a plurality of needles and an electromagnet assembly:

said electromagnet assembly comprising a plurality of electromagnetic structures radially distributed on a circular segment of a supporting ring member, each of said plurality of electromagnetic structures including a pole piece and an armature;

said armature having a lever arm acting on one of said plurality of needles to drive said needle towards the platen;

armature adjusting means, said armature adjusting means including an armature retainer, a resilient ring and an adjusting disc;

said retainer, said resilient ring and said adjusting disc cooperating to secure each of said armatures in a preferred rest position;

said adjusting disc for adjusting the rest position of each of said armature housing a plurality of adjusting screws, one for each armature, said resilient ring been interposed between said armature retainer and said adjusting disc;

said resilient ring including a plurality of inner projections, each one of said projections being in contact with one of said lever arm on one side and being adjusted in position by one of said adjusting screws from the opposite side, and wherein said projections have a thickness greater than the thickness of said resilient ring and act as a damping element for said armature, whereby the rest position of said armatures is individually defined and adjusted by said adjusting screws, through said projections, and rebound of said armature is dampened by said projections of said resilient ring.

4,367,963

REFILLABLE TYPEWRITER RIBBON CARTRIDGE

James R. Daughters, San Leandro, Calif., assignor to Wordex, San Leandro, Calif.

Filed Jul. 21, 1980, Ser. No. 170,495
Int. Cl.³ B41J 33/14
U.S. Cl. 400—208 **21 Claims**

1. A protective carton for enclosing a typewriter ribbon spirally wound in a pancake about a supply hub, said carton and pancake being configured to be enclosed within a rechargeable typewriter ribbon cartridge adapted to admit said carton, said cartridge having a frame, a top surface and a bottom surface, said carton comprising:

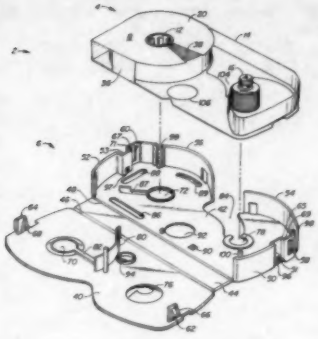
a first section defining a lower surface, said lower surface to rest adjacent the bottom surface of said cartridge;

a second section defining an upper surface;

a third section including means for connecting said lower

and upper surfaces to define a space for enclosing said ribbon pancake therein;

said third section defining at least one opening for passage of said ribbon from said ribbon pancake out of and back into said carton; and



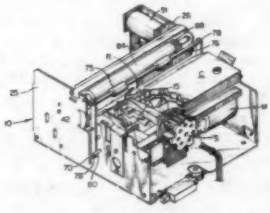
said upper and lower surfaces having apertures for registry about the ends of said supply hub so that said spirally wound ribbon may rotate within said space as said ribbon is taken from said ribbon pancake through said opening, whereby an ink ribbon may be replaced in the cartridge.

4,367,964

SERIAL IMPACT CALCULATOR PRINTER WITH DUAL FEED AND VALIDATION MECHANISM

Dean H. Cranston, Riverton, Wyo., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 19, 1980, Ser. No. 179,491
Int. Cl.³ B41J *11/50*
U.S. Cl. 400—605 20 Claims



1. In a printer having a frame upon which is mounted a pair of record media advancing rollers having external surfaces engageable with one another to form a guide path for advancement of a record medium therebetween and into position for impression of characters thereon by a print head, the improvement comprising:

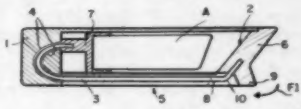
incremental drive means associated with one of said record medium drive rollers including a ratchet member mounted on said one recording medium drive roller and indexing means having a pivotal feed pawl of generally U-shaped configuration, said feed pawl defining a drive arm and limit arm movable into engagement with circumferentially spaced teeth on said ratchet member, said indexing means including means normally urging said drive arm and limit arm into engagement with said ratchet member, releasing means selectively energizable to advance said drive arm and limit arm away from engagement with said ratchet member, said indexing means operative when said releasing means is de-energized to move said drive arm into engagement with one of said ratchet teeth to advance said one record medium advancing roller a limited distance prior to engagement by said limit arm with a circumferentially spaced tooth on said ratchet member to prevent further advancement of said one record medium advancing rollers.

4,367,965

CASING FOR LIPSTICK OR BALL POINT PEN REFILLS

Francois X. Speitel, Chateau des Landes, and Robert F. M. Speitel, Challes-Perigne l'Eveque, both of France, assignors to Teleplastics Industries Company, Perigne l'Eveque, France

Filed Dec. 29, 1980, Ser. No. 221,012
Claims priority, application France, Dec. 27, 1979, 79 31727; Sep. 15, 1980, 80 19813
Int. Cl.³ A45D *40/06*
U.S. Cl. 401—60 4 Claims



1. A container comprising an elongated body with an opening in the terminal face for the passage of the contents therein, a slot along a longitudinal lateral side of said body, said slot ending in said opening through a rounded part and merging in the internal chamber of said body, guide means forming grooves in the lateral sides of said slot, a flexible element sliding in said guide means forming grooves and attached at its one end within said internal chamber to the contents which is slidingly guided in said chamber and at its other end to an actuation push button which can slide outside of the body along said slot and over said opening so as to cover said opening, second guide means forming grooves in the lateral sides near the bottom of said slot ending in grooves on the lateral sides of the opening parallel to said slot through a rounded part, a sliding block slidingly mounted in said second guide means forming grooves, fastening means joining said sliding block and said push button and means biasing said push button toward said sliding block.

4,367,966

ERASABLE INK FOR BALL POINT PENS COMPRISING TRIFLUOROETHYLENE AND VINYL ACETATE POLYMERS

Raymond S. Williams, Boulder City, Nev., and Paul C. Fisher, 711 Yucca St., Boulder City, Nev. 89005, assignors to Paul C. Fisher, Boulder City, Nev.

Filed Nov. 12, 1981, Ser. No. 320,443
Int. Cl.³ B43K *7/00, 7/10*; C08K *5/02*
U.S. Cl. 401—190 2 Claims

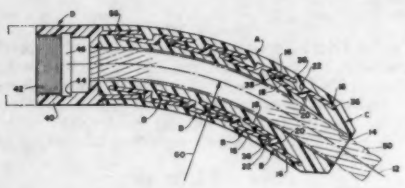
1. In combination, a ball point writing instrument containing an ink capable of depositing a visible trace by writing with its ball on paper, said ink comprising at least 10% by weight of an elastomer selected from the group consisting of polyvinyl acetate homopolymer since polyvinylacetate is generic to ethylene and vinyl acetate copolymer and applicant has support for the term by generic term-Vinac-generic Trade Name term and intented polymer, a copolymer of ethylene and vinyl acetate and mixtures thereof, and at least about 10% by weight of trichloroethylene.

4,367,967

BENDING STRAIN RELIEF WITH BEND RESTRICTING CAPABILITY

Frank Albert, Jr., Parma, Ohio, assignor to Preformed Line Marine, Inc., Cleveland, Ohio

Filed Jun. 3, 1981, Ser. No. 269,848
Int. Cl.³ H01R 13/56; F16L 57/00
U.S. Cl. 403—41 6 Claims



1. A bending strain relief comprising:

an elongated tubular member having a longitudinal axis and including a plurality of substantially rigid identical commonly oriented sleeve members encapsulated within deformable elastomeric material, said sleeve members being positioned one after another along said axis out of engagement with one another and being connected together by said elastomeric material,

each said sleeve member having opposite large and small diameter cylindrical end portions, said small diameter end portion having an outer cylindrical surface and a circular small diameter terminal end, said large diameter portion having an inner cylindrical surface and a circular large diameter terminal end,

said sleeve members having said large and small diameter end portions longitudinally overlapping one another in radially-spaced relationship,

each outer surface having an outward circular portion of a first fixed diameter immediately adjacent its terminal end, and an axially spaced inward circular portion of said first fixed diameter axially spaced inwardly from said outward circular portion,

each inner surface having an outward circular portion of a second fixed diameter immediately adjacent its terminal end, and radially aligned with said inward circular portion of said outer surface of the overlapping adjacent sleeve member, and an inward circular portion of said second fixed diameter axially spaced inwardly of its terminal end and radially aligned with said outward circular portion of said outer surface of the overlapping adjacent sleeve member;

abutment means including the relationship between said fixed diameters, the radial spacing between said inner and outer surfaces and the axial spacing between circular portions of respective surfaces that determines the degree of longitudinal overlap between said large and small diameter end portions;

said abutment means providing and limiting relative angular movement only up to 20°, about a pivot axis perpendicularly intersecting said axis, between two adjacent sleeve members until precluded by first substantial abutment between said outward circular portion of said outer surface of one sleeve and said inward circular portion of said inner surface of the adjacent sleeve and second substantial abutment between said outward circular portion of said inner surface of the adjacent sleeve and said inward circular portion of said outer surface of said one sleeve;

said first and second substantial abutments being diametrically opposite each other and being spaced a substantial axial distance; and

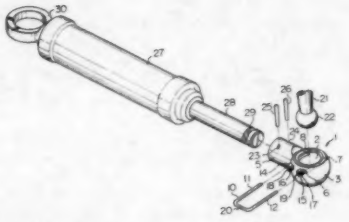
said elastomeric material being within said radial spacing so that during said relative angular movement said elastomeric material is elastically deformed and elastically flows away from said first and second abutments and constitutes spring means for biasing said tubular member to reduce any relative angular movement between adjacent sleeve members.

4,367,968

BALL JOINT

Kunio Ishida, Yokohama, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Oct. 23, 1980, Ser. No. 200,063
Claims priority, application Japan, Oct. 29, 1979, 54/149933[U]
Int. Cl.³ F16 3/00; F16C 11/00; F16D 1/12
U.S. Cl. 403—122 4 Claims



1. A ball joint comprising:

a ball member having a spherical end;

a socket member formed of a synthetic resin material and having a recess;

said spherical end being received in said recess such that said ball member is rockable with respect to said socket member;

a generally U-shaped pin member having two generally parallel legs joined by a central portion;

said legs of said pin member being inserted through respective openings in said socket member, with center portions of said legs engaging the exterior of said spherical end, thereby retaining said spherical end within said recess; and

projection means formed integrally with said socket member on the exterior thereof for retaining said pin member in the inserted position thereof, said projection means including resilient means defining an opening portion resiliently receiving therein said central portion of said pin member when said legs of said pin member are inserted into said openings in said socket member.

4,367,969

BUSHING FOR ATTACHING FIBERGLASS TOOL HANDLES

Joseph A. Carmien, P.O. Box 1165, Sun Valley, Calif. 91352

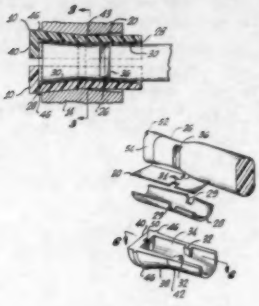
Filed Aug. 31, 1979, Ser. No. 71,177
Int. Cl.³ B25G 3/00; F16B 9/00; F16L 41/00
U.S. Cl. 403—253 1 Claim

1. In a tool joint connecting a tool head to a tool handle in which the tool head being attached has a double tapered opening therethrough with side walls tapering inwardly from the top and bottom thereof, and further including a bushing comprised of a plurality of sections having a combined outwardly tapered exterior formed substantially complementarily to the upper tapered portion of said tool head opening and to fitted therein; the improvement comprising:

a tongue portion of said tool handle to which said tool head is to be attached having a double tapered external surface forming a generally hourglass shape;

said bushing including a double tapered interior surface formed substantially complementarily to said hourglass shaped tongue portion of said tool handle and said bushing is fitted thereon and co-operates, therewith, said upper tapered portion of said tool head opening coacting said outwardly tapered exterior of and forcing said bushing,

said double tapered interior of said bushing into intimate contact with said hourglass shaped tongue portion of said tool handle, thereby preventing relative axial movement of said bushing along said tool handle; and



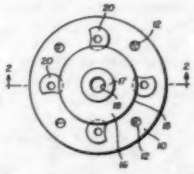
means projecting from said tool handle for engaging a cooperating means on said bushing to prevent relative rotation of said bushing with respect to said tool handle about the longitudinal axis of said tool handle.

4,367,970

DIE INSERT LOCK SCREWS

Louis J. Franz, 313 Crane Ave., Royal Oak, Mich. 48067

Division of Ser. No. 82,140, Oct. 5, 1979, Pat. No. 4,288,902.
This application Mar. 25, 1981, Ser. No. 247,327
Int. Cl.³ F16B *21/02*; F16D *1/00*
U.S. Cl. 403—323 **1 Claim**



1. In a retainer having a wall surface forming a socket, said socket being generally circular and said wall surface being generally cylindrical in shape, said retainer including a number of spaced apart threaded openings and a number of notched head lock screws of the type used for releasably locking a die part insert within said retainer socket, and each lock screw having a threaded shank for threadedly engaging within one of said threaded openings formed in the retainer and each lock screw having a head which normally partially overlaps the socket for engaging within a groove formed in the die part insert for locking the insert within the socket, and with the peripheral edge of each screw head having a circumferentially elongated notch of a size for alignment within the wall defining the socket and the corresponding adjacent insert surface for thereby releasing the engagement between the head and the insert groove so that the insert may be removed from the retainer, the improvement comprising:

each said notch being normally arranged with one end thereof at the retainer socket forming wall surface and extending lengthwise approximately perpendicularly of such wall surface when the respective screw is tightened within the threaded opening to where the base of the screw head is tightly in engagement with the seating surface formed by the exposed retainer surface surrounding the entry to the threaded opening, and wherein each of the elongated screw head notches are approximately radially aligned relative to the socket wall when their heads are tightened against their respective retainer seating surfaces;

wherein the distance between the bottom surface of each screw head and a pre-selected point on the crest of a thread remote from said bottom surface in the plane which includes the center of a respective notch being equal to the distance between a correspondingly pre-selected point on the root of the thread of the threaded hole and the seating surface in the plane which includes a radius of the socket, with the two planes being 90° out of phase when the bottom surface of the screw is tightened against its respective seating surface, and being in phase alignment when the screw head is loosened and turned to align the notch with the retainer socket forming wall surface; and

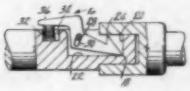
whereby a partial turn of each screw in the thread loosening direction aligns the socket with the insert surface for unlocking, and tightening the screw provides the maximum face to face contact between the base of the head and the adjacent seating surface.

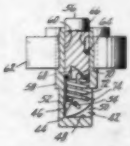
4,367,971

SOCKET RETAINERS

Alfred S. Coren, 113 Hunnewell St., Needham, Mass. 02192

Filed Jun. 15, 1981, Ser. No. 273,757
Int. Cl.³ B25G *3/00*; F16B *7/18*; F16D *1/00*; F16L *15/00*
U.S. Cl. 403—330 **7 Claims**





1. A joint for coupling two members comprising a female member formed with a polygonal cavity, a stud having a cross-section complementary to that of the cavity, means defining a longitudinal recess in the stud, a locking lever fitted to the recess, the lever having a forward end pivoted on an abutment in the recess and an intermediate pawl enggaging the cavity at a point rearwardly from the abutment and a resilient means urging the pawl into engagement with the cavity.

4,367,972

ATTACHMENT ARRANGEMENT

Raymond Panthout, 7 allee Mouille-Boeuf, 92290 Chatenay Malabry, France

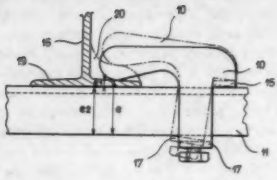
Filed Apr. 9, 1979, Ser. No. 28,530
Int. Cl.³ F16B *2/02*
U.S. Cl. 403—387 **12 Claims**

1. Attachment arrangement for connecting a bar- or beam-shaped member to the flange of an I-beam or the like, the arrangement comprising

a retaining bracket for receiving the bar to be attached and provided with means for clamping the bracket to one side of the bar and with a bearing surface at which the arrangement bears against the opposite side of the bar, and

an extension defining a bearing area cooperating with the flange of the I-beam which adjoins said opposite side of the bar, the clamping means having a surface which

clamps against the bar and which is located at an intermediate point along the length of the bar between the bearing surface against the bar and the bearing area against the flange of the I-beam.

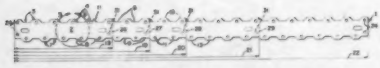


4,367,973

STRUCTURAL STRAP TIE

Tyrell T. Gilb, Berkeley, and Alfred D. Commins, Livermore, both of Calif., assignors to Simpson Manufacturing Co., Inc., San Leandro, Calif.

Filed Apr. 13, 1981, Ser. No. 253,679
Int. Cl.³ B25G *3/00*; F16D *1/00*; F16G *11/00*
U.S. Cl. 403—405 4 Claims



1. A metal strap tie **1** for joining nailable timber members comprising:

a. a mid-portion **2** having a length substantially greater than its width and substantially free of fastener openings providing a structural member for providing substantial resistance to tension forces;

b. a leading outboard portion **3** forming a patterned edge and forming a series of leading nail holding areas **4** and alternating leading cutout areas **6** integral with said mid-portion;

c. a trailing outboard portion **7** forming a patterned edge and forming a series of trailing nail holding areas **8** and alternating trailing cutout areas **9** integral with the opposite side of said mid-portion;

d. said leading nail holding areas **4** are positioned so that they are generally transversely opposed to said trailing cut-out areas **9**;

e. nail openings **11** formed in substantially all of said nail holding areas; and

f. said nail openings are positioned so that projection lines **12** joining said nail openings form substantially equilateral triangles.

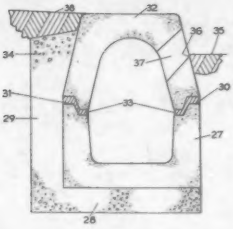
4,367,974

SURFACE DRAINAGE SYSTEM AND COVER MEMBER FOR USE THEREIN

Neill S. Beanland, Garforth, England, assignor to West Yorkshire Metropolitan County Council, Wakefield, England

Filed Jan. 30, 1981, Ser. No. 230,364
Int. Cl.³ E01C *11/22*
U.S. Cl. 404—5 13 Claims

8. A surface drainage system comprising in combination open-ended channel section concrete base members each having a base wall and two opposite side walls between which the channel is defined, the base members being designed to be laid end-to-end in longitudinal alignment, and concrete cover members each being of inverted channel section and, as seen in cross-section, having a top wall and two opposite, symmetrical side walls which diverge from the top to the bottom of the cover member, the inner surface of the top wall and the diverging inner surfaces of the side walls defining respectively the top and sides of the channel, the channel having an open bottom and ends and being of uniform cross-section throughout the length of the cover member, and the cover member having at least one opening extending at a downward inclination through a side wall thereof from the outer surface to the inner surface of the side wall, the transverse cross-sectional area of the opening increasing from the outer surface to the inner surface of the side wall, the intersection of the opening with the outer surface of the side wall having a lowermost part that is no closer to the bottom than to the top of the cover member and the whole of the opening intersecting the inner surface of the side wall to open into the respective side of the channel, the cover members being laid above the base members and combining therewith to form an enclosed drainage channel.

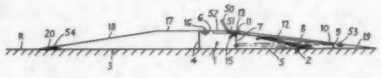


4,367,975

TRAFFIC BARRIERS

Paul D. Tyers, Watford, England, assignor to Controlec Limited, Rickmansworth, England

Continuation-in-part of Ser. No. 96,674, Nov. 23, 1979, abandoned. This application Apr. 20, 1981, Ser. No. 255,839
Claims priority, application United Kingdom, Nov. 23, 1978, 45810/78
Int. Cl.³ E01F *13/00*
U.S. Cl. 404—6 21 Claims



12. A traffic barrier for controlling a flow of vehicles, comprising in combination:

(a) a step-like obstruction adapted to resist the advance of a vehicle, said step-like obstruction having a top and abutment means;

(b) a platform disposed in advance of said step-like obstruction and having a leading edge remote from said obstruction and a trailing edge adjacent said abutment means of said obstruction;

(c) hinge means mounting said platform for rocking movement between a lowered position and a raised position in which said trailing edge of said platform is adjacent said top of said step-like obstruction;

(d) means urging said platform into said raised position;

(e) said platform being depressible into said lowered position by a vehicle advancing over said platform from said leading to said trailing edge thereof, whereby said abutment means of said step-like obstruction is presented to said vehicle to resist advance thereof;

(f) latch means movable between a release position and a locking position in which said latch means locks said platform in said raised position, whereby to permit a vehicle to advance over said platform and said step-like obstruction; and

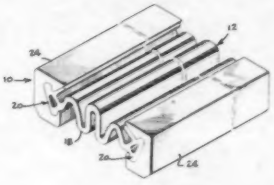
(g) control means to control said latch means in response to advance of a vehicle relative to the barrier.

4,367,976

EXPANSION JOINT SEALING STRIP ASSEMBLY FOR ROADWAYS, BRIDGES AND THE LIKE

William E. Bowman, Englewood, Colo., assignor to Bowman Construction Supply, Inc., Denver, Colo.

Filed Jun. 30, 1980, Ser. No. 164,013
Int. Cl.³ E01C 11/04
U.S. Cl. 404—68 22 Claims



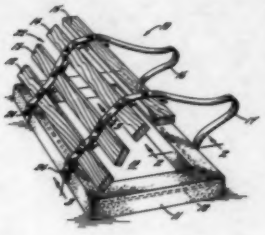
17. An expansion joint seal assembly for sealing a roadway gap and the like, comprising a pair of spaced apart elongated anchoring channel extrusion members to be secured in structural slab portions oppositely bounding the gap, each of the anchoring channel members including a generally rectangular cross-section channel-shaped body having an anchoring cavity extending the length thereof opening toward the gap shaped to define a constricted entrance throat portion opening to the gap through a front face of the channel member and communicating with a transversely enlarged, rearwardly spaced inner retaining chamber portion, the constricted throat portion being bounded below by a rounded toe formation, the retaining chamber portion having a generally oval vertically elongated cross-sectional configuration whose major axis lies in an inclined plane declining in downwardly convergent relation forming a small acute angle with a vertical center plane of the gap and providing a flat back wall paralleling said inclined plane between opposed concave recessed troughs forming the upper and lower bounding surfaces of the retaining chamber, an elongated resilient sealing strip member for sealing the gap between said anchoring channel members including an intermediate diaphragm web portion bounded along each longitudinal edge by enlarged anchoring bead formations of like cross-section, the web portion having a folded cross-sectional configuration providing distortable fold portions for maintaining sealing of the gap while accommodating expansion and contraction of the width thereof, and said anchoring bead formations each forming substantially a hollow triangle in cross-section comprising a generally flat back wall portion forming one side of the triangle and bottom and front wall portions forming the other sides of the triangle and generally converging toward the center of the gap, said back wall portion joining upper and lower convex salient promontories whose exterior surfaces conform in cross-section to the surfaces of said recessed troughs and back wall to intimately interfit in said retaining chamber portion and anchor the sealing strip therein, and said bottom wall portion having a shallow concave trough therein receiving said lower rounded toe formation in nested relation therein as a fulcrum about which the bead formation pivots to insert the bead formation into the anchoring cavity, said anchoring bead formations including a rib-like, generally planiform tab formation extending the length thereof projecting toward the vertical midplane of said web portion in upwardly converging relation along a plane forming a slightly sharper angle with said vertical midplane than the plane of said ramp surface whereby said tab formation is flexibly stressed downwardly somewhat from its normal elastic memory position to lie flat against said ramp surface when the bead formations are seated fully in said anchoring cavities.

4,367,977

SHORE EROSION PREVENTION MODULES

Cecil F. Schaaf, and Craig R. Schaaf, both of 3015 Palmer Rd., Standish, Mich. 48658

Filed Nov. 12, 1980, Ser. No. 206,144
Int. Cl.³ E02B 3/04
U.S. Cl. 405—25 4 Claims



1. A barrier module adapted to be submerged in a body of water near a shoreline which is to be protected against wave-induced erosion, comprising:

a base having a specific gravity substantially greater than water and adapted to lie on the bottom of the body of water;

an apertured barrier connected to the seaward side of said base and having buoyant means for normally causing said barrier to extend generally vertically upwardly from said base in a plane parallel to the shoreline when submerged in calm water, flexible strap means connected to the upper edge of said barrier and to the shoreward side of said base to limit the distance which said barrier can be displaced in a seaward direction relative to said base, said barrier being flexible and swingable relative to said base about a horizontal axis parallel to the shoreline and located substantially at the connection of said barrier to the seaward side of said base, under the combined control of water currents and said buoyant means and said strap means;

said apertured barrier yielding shorewardly and downwardly about said connection to the seaward side of said base when subjected to shorewardly directed water flow to present relatively little resistance to said flow, but said strap means controlling the position of said upper edge of said barrier during seawardly directed water flow so that seaward water pressure against said barrier causes said barrier to assume a pocket-like shape which is concave on its shoreward side to thereby create relatively high resistance to seaward water flow to retard such flow sufficiently to cause water borne sand to be deposited in the vicinity of said base.

4,367,978

DEVICE FOR PREVENTING BEACH EROSION

Cecil Schaaf, and Craig Schaaf, both of 3015 Palmer Rd., Standish, Mich. 48658

Filed Sep. 15, 1980, Ser. No. 186,941
Int. Cl.³ E02B 3/04
U.S. Cl. 405—30 15 Claims

1. An off-shore erosion protection device for positioning in a substantially submerged manner on a surf area floor along a water shoreline comprising:

a prism-shaped module having a bottom wall, side walls and oppositely inclined upwardly converging front and rear walls, said front and rear walls adapted to generally face in seaward and landward directions, respectively;

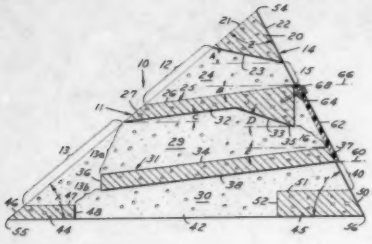
at least one flow control passage extending through said module interconnecting front and rear wall openings, respectively;

said passage when submerged defining hydrostatic pressure-

loaded upper and lower opposed surfaces, such that the effective projected area of said lower pressure surface exceeds the effective projected area of said upper pressure surface, wherein the differential area establishes a downwardly acting resultant hydrostatic pressure force on said module to assist the module gravitational force in retaining said module at a fixed location on the surf area floor;

said passage lower surface being sloped upwardly at a predetermined defined angle to the horizontal in the direction from said front to rear walls, whereby the cross-sectional area of said passage converges toward said rear wall;

said passage characterized in that its sloped lower surface is adapted to respond to impacting forces of incoming waves, whereby resultant downward dynamic force components on the lower surface assist the module gravitational force in retaining said module at a fixed location on the surf area floor.



4,367,979

CONNECTOR DEVICE

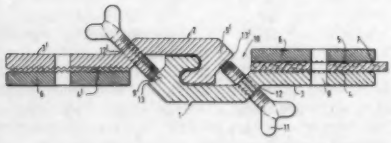
Donald L. Milligan, Wirral, England, assignor to Hoyle Marine Limited, Wallasey, England

Filed Oct. 9, 1980, Ser. No. 195,890

Claims priority, application United Kingdom, Oct. 9, 1979, 7934937

Int. Cl.³ E02B *15/04*

U.S. Cl. 405—70 **12 Claims**



1. A connector device for joining the ends of an oil boom length or section to another length or section, comprising two connector members with each member having a portion securable to the end of an oil boom section and, extending from said portion, an interconnecting channel portion shaped and dimensioned so as to co-operate with the oppositely arranged interconnecting channel portion of the other connector member such that when the channel portions are pulled in opposite, outward directions, the channel portions interengage, and such that to disengage the channel portions of two members, the connector members have to execute a parallel or substantially parallel relative displacement with respect to each other with said securable portions moving towards each other before disengagement of the channel portions is possible, and securing or locking means locatable at an angle to said parallel displacement so as to extend into a space into which one of the interengaged channel portions moves after said parallel displacement and disengagement so as to prevent said parallel displacement and thereby interlock the two members, said securing means being also releasable to permit separation of said two members by said parallel displacement.

4,367,980

METHOD AND APPARATUS FOR COMPLETING DIVERLESS SUBSEA LARGE DIAMETER FLOWLINE CONNECTIONS

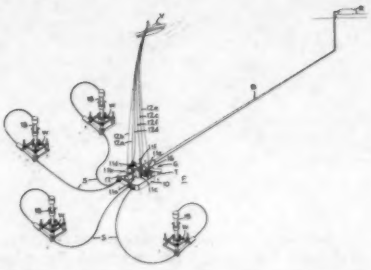
Thomas J. Ames, Houston, and Glen H. Culper, Spring, both of Tex., assignors to FMC Corporation, Chicago, Ill.

Filed Aug. 5, 1980, Ser. No. 175,621

Claims priority, application United Kingdom, Sep. 29, 1979, 7933859

Int. Cl.³ F16L *1/04*

U.S. Cl. 405—169 **14 Claims**



1. Apparatus for connecting a large diameter flowline bundle to a plurality of smaller flowlines, said apparatus comprising:

a first connector mounted on one end of said large flowline bundle, said first connector having a plurality of connector hubs each connected to said large flowline bundle;

a pull-in cable;

means for connecting said pull-in cable to the geometric center of said first connector;

a plurality of small connectors each mounted on one end of a corresponding one of said smaller flowlines;

means for moving said pull-in cable and said first connector into a fixed position adjacent said small connectors;

means for connecting each of said small connectors in precise axial alignment with the corresponding one of said connector hubs; and

means for sealing each of said small connectors in a fluid-tight relationship with a corresponding one of said connector hubs.

4,367,981

FLUID PRESSURE-TENSIONED SLIP JOINT FOR DRILLING RISER

Maurice S. Shapiro, Oxnard, Calif., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 29, 1981, Ser. No. 278,810

Int. Cl.³ E02D *21/00*; E21B *7/128*

U.S. Cl. 405—195 **3 Claims**

1. A slip joint for a drilling riser, including,

a first portion of the drilling riser,

a second portion of the drilling riser comprising a sleeve which is sized in diameter to telescope within the first riser portion,

a first seal body mounted on the end of the sleeve of the second riser portion engaging the internal wall of the first riser portion to contain drilling fluid flowing within the telescoped riser portions,

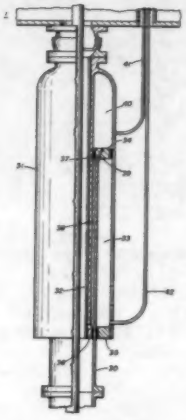
a barrel member connected to the external surface of the second riser portion and extending over the telescoped end of the first riser portion,

a second seal body mounted on the end of the barrel and extending radially into sliding and sealing engagement with the external surface of the first riser portion,

a third seal body mounted on the end of the first riser portion and extending radially into sliding/sealing engagement with the internal wall of the barrel member to form a first

fluid pressure chamber with the second seal body in the annulus between the barrel member and the external surface of the first riser portion and a second chamber formed with the first seal body and the third seal body in the annulus between the barrel member and the external surface of the sleeve of the second riser portion,

a first supply of fluid pressure connected to the first chamber



through the wall of the barrel to generate the force on the second seal body directed to provide a tensioning force on the first riser portion,

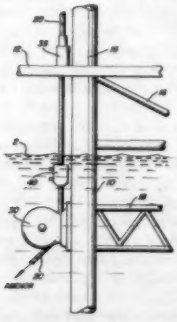
and a second supply of fluid pressure connected to the second chamber through the wall of the barrel to generate the pressure sufficient to exclude drilling fluid from passing between the seal surfaces of the first seal body and the internal wall of the first riser portion.

4,367,982

SAFETY DEVICE FOR ANCHORED MARINE STRUCTURE

Jack L. Hubbard, deceased, late of Dallas, Tex. (by Bonny J. Hubbard, administrator), assignor to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 4, 1980, Ser. No. 183,917
Int. Cl.³ E02D *21/00*
U.S. Cl. 405—202 **7 Claims**



1. A marine structure for placement in a body of water comprising

a plurality of guy lines radially disposed around the structure for maintaining the structure in predetermined position above the marine bottom;

means for anchoring the guy lines at spaced locations on the marine bottom;

a plurality of underwater guide means operatively connected to receive a guy line in sliding relationship, said guide means being mounted on the marine structure at radially spaced points;

a plurality of above water guy line attachment means disposed to receive the guy lines from corresponding guide means; and

fixed braking means mounted on each of the guy lines between the guide means and attachment means for contacting its respective guide means to prevent loss of the guy lines in the event of a severing of the line above water,

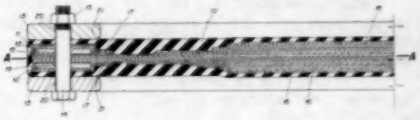
each of said braking means being located above its respective guide means a sufficient distance to permit lateral excursion of said marine structure in extreme environmental conditions without contacting its respective guide means.

4,367,983

LEG CLOSURE

Steven G. Streich, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Dec. 29, 1980, Ser. No. 221,125
Int. Cl.³ E02D *5/52*
U.S. Cl. 405—227 **11 Claims**



1. In combination, a closure and an annular closure retaining means retaining said closure therein for closing the bore of a tubular support member of a marine platform located in a body of water or other similar structure located in a fluid environment, wherein said closure comprises:

circular flexible member means having a peripheral portion and an inner portion;

annular reinforcing member means located in the peripheral portion of the circular flexible member means; and

reinforcing means having a peripheral portion and an inner portion contained within the circular flexible member means, the reinforcing means comprising at least one layer of reinforcing means, each layer of reinforcing means comprising a plurality of strip means, each strip means comprising a strip of fabric having longitudinal threads and one or more fill threads, being secured to adjacent strip means and to the annular reinforcing member means and having the longitudinal threads therein generally extending along radial lines of a horizontal plane of said closure such that when said closure is subjected to loading by the hydrostatic pressure of said water or fluid the longitudinal threads are subjected to substantially uniform loading.

4,367,984

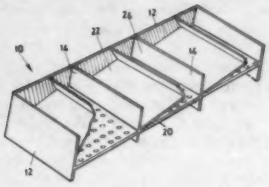
STABILIZATION OF PARTICULATE MATERIAL

Frederick D. Cartwright, 506 Lake Club Apartments, Lake Rd., Germiston, Transvaal, South Africa

Filed Jun. 9, 1980, Ser. No. 157,309
Claims priority, application South Africa, Jun. 13, 1979, 79/2917
Int. Cl.³ E02D *3/12*
U.S. Cl. 405—258 **5 Claims**

1. Apparatus for use in stabilizing a surface layer of a body of particulate material comprising a horizontally-extending surface wall structure which extends along the top surface of

said surface layer and which is constructed to permit liquid to flow vertically into said surface layer, and a vertically-extending wall structure which is formed by upper wall portions and lower wall portions, said upper wall portions forming a open-topped compartment positioned above said surface wall structure and adapted to receive liquid from above and to prevent the liquid from flowing a substantial distance horizontally, whereby the liquid is held in said compartment while it passes through said surface wall structure into said surface layer, said lower wall portions extending into said surface layer and diverting liquid downwardly in said surface layer.



4,367,985

METHOD OF SEALING SALINA EXCAVATIONS

Jerzy Tomaszewski; Andrzej Chmarzynski, and Rafal Nowakowski, all of Torun, Poland, assignors to Uniwersytet Mikolaja Kopernika, Torun, Poland

Filed Oct. 25, 1979, Ser. No. 88,279

Claims priority, application Poland, Oct. 17, 1978, 210332; Mar. 15, 1979, 214184

Int. Cl.³ E02D 3/12

U.S. Cl. 405—264 **8 Claims**

1. In a method of sealing salina excavations, wherein salting out substances are introduced into the effluent from rock mass salt rifts, said salting out substances being selected from the group consisting of inorganic salts, organic solvents, and mixtures thereof, the improvement comprising the steps of: sampling said effluent; adjusting said salting out substances in quantity and quality to the effluent properties, said properties being determined with regard to the complete chemical analysis of said effluent and the solubility isotherm of said effluent in a given system, and adjusting to such a degree of supersaturation which will allow maximization of the linear speed of overgrowth of the wall of the rift by crystals identical with or isostructural with the salts forming the rock mass; and then introducing the suspension of the effluent thus adjusted with the salting out substance into the rifts to control the rate of crystallization to achieve uniform sealing of said rifts.

4,367,986

METHOD FOR IMPROVING THE STRENGTH OF A WATER-SATURATED SOFT SOIL

Hajime Miyoshi, Koganei; Ikuo Okabayashi, Yamato, and Etsuo Asanagi, Kashiwa, all of Japan, assignors to Chiyoda Chemical Engineering & Construction Co., Ltd., Kanagawa, Japan

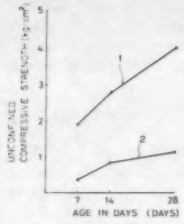
Division of Ser. No. 115,491, Jan. 25, 1980, Pat. No. 4,299,516. This application Oct. 8, 1981, Ser. No. 309,766

Claims priority, application Japan, Jan. 29, 1979, 54-8915

Int. Cl.³ C09K 17/00; E02D 3/12

U.S. Cl. 405—266 **3 Claims**

1. A method for improving the strength of a water-saturated soft soil, which comprises admixing the soft soil with an ingredient A comprising gypsum and an ingredient B comprising a mixture of 40–55% by weight of a Portland cement and 60–45% by weight of a water-granulated iron blast furnace slag, the slag having a particle size almost the same as or less than that of the cement, the ratio by weight of the ingredient A to the ingredient B being within the range from 10/90 to 30/70, and the soft soil being admixed with the ingredient A simultaneously with the ingredient B.



4,367,987

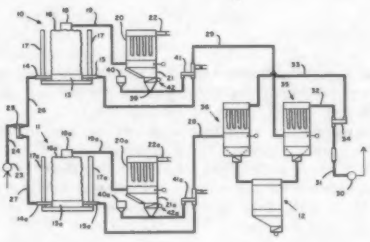
DISPENSING SYSTEM FOR POROUS FLOOR CONTAINERS

Armon J. Walters, 39 Haverhill Rd., Trumbull, Conn. 06611

Filed Nov. 3, 1980, Ser. No. 203,015

Int. Cl.³ B65G 53/66, 53/40

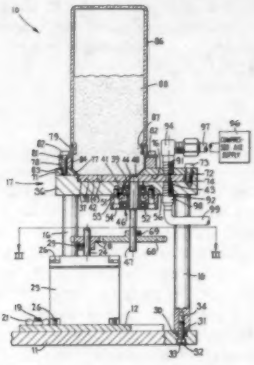
U.S. Cl. 406—15 **24 Claims**



1. Pneumatic scaling system for aerating and conveying predetermined amounts of a dry solid particulate material from a supply container to one or more receiving containers and for controlling all of the air in said system to prevent the discharge of any solid particulate material into the atmosphere, comprising a closed fluidized bed supply container for solid particulate material, said container having a porous floor, an air inlet for introducing fluidizing air beneath said floor, a fluidized material outlet above said floor and an air vent outlet above the level of said particulate material, blower means for supplying a continuous flow of fluidizing air to said inlet and through said porous floor to fluidize the particulate material within said supply container, a vacuum delivery conduit connected to said fluidized material outlet and terminating at a filter means adapted to separate all of the solid particulate material from the conveying air and to release the filtered conveying air while directing all of the solid particulate material to one or more receiving container(s), valve means in said vacuum delivery conduit for closing said vacuum delivery conduit, an external material recovery conduit connected to said air vent outlet of the supply container to convey all of the vented solid particulate material and vent air from said supply container to said vacuum delivery conduit at a point beyond said valve means and thence to said filter means, valve means in said material recovery conduit for closing said material recovery conduit, secondary air inlet means for introducing external air through said material recovery conduit and said vacuum delivery conduit to purge the contents thereof to said filter means, and an adjustable scaling means adapted to sense the weight loss of the supply container and cause deactivation of the blower means and closing of said valve means in said vacuum delivery con-

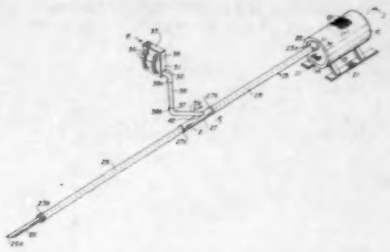
duit and opening of said air inlet means to purge said vacuum delivery conduit and said material recovery conduit to said filter means when a predetermined weight of solid particulate material has been fed from said supply container.

4,367,988
DUST GENERATOR
Basil K. J. Leong, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Filed Oct. 8, 1980, Ser. No. 195,224
Int. Cl.³ B65G 53/46
U.S. Cl. 406—63 5 Claims



1. An apparatus for delivering a selected amount of dust-contaminated gas comprising:
a base structure having support means with a substantially horizontal support surface;
plate means supported upon said surface for rotation about a central axis perpendicular to said surface, said plate means having a plurality of transverse openings arranged in a circle concentric with said central axis;
cover means secured to said support means for enclosing a substantial portion of said plate means;
means defining a hopper opening through said cover means arranged for communication with said transverse openings in said plate means;
hopper means mounted upon said cover means and communicating with said hopper opening to define with said cover means and said support means an airtight dust chamber;
drive means mounted upon said support means and connected to said plate means for rotating same;
substantially coaxial openings through said support means and said cover means arranged for successive alignment with each of said transverse openings as said plate means is rotated, said coaxial opening in said cover means being connected to a source of gas under pressure;
a leakage space provided between said plate means and said cover means extending laterally from said coaxial opening in said cover means to the bottom of said hopper means for passing the gas from said cover means into said hopper means when said coaxial openings are not aligned with any of said transverse openings in said plate means so as to agitate the dust in said hopper means, said central axis of said plate means being offset from the center of said hopper opening laterally towards said substantial coaxial openings in said support means and cover means, said central axis of said plate means still lying laterally within the perimeter of said hopper opening, such that said leakage space extends substantially the full radial distance on said rotatable plate means from said concentric circle substantially to said central axis.

4,367,989
PORTABLE GOLD COLLECTION APPARATUS
Terry G. Smith, 124 McKiernan Dr., Folsom, Calif. 95630
Filed Nov. 21, 1980, Ser. No. 209,051
Int. Cl.³ B65G 53/14
U.S. Cl. 406—153 11 Claims

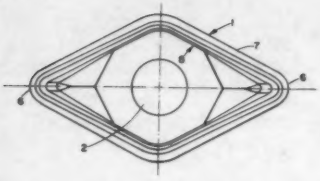


1. An apparatus for collecting particulate material including gold or the like comprising, in combination:
a container for said particulate material having an inlet,
a conduit having a central bore connected at one end to said container inlet,
air blowing means having an outlet and adapted to be supported on the body of a user,
a duct connected at one end in communication with said outlet of said air blowing means, the other end of said duct connected in communication with said conduit central bore for directing air blowing means into said conduit central bore towards said conduit one end to provide a jet pump action,
and a nozzle having an inlet on the other end of said conduit for sucking said particulate material into said conduit central bore by said jet pump action including deflector means in said conduit central bore downstream of said duct other end for radially deflecting the stream of particulate material flowing in said central bore to thereby reduce the cross-sectional area of said stream and increase the velocity of said stream flowing towards said container wherein said deflector means comprises a segmental plate mounted on the lower portion of the inner wall of said conduit within said central bore,
said segmental plate having a side face inclined towards said conduit one end for directing said stream of particulate material towards the upper portion of said conduit inner wall,
said segmental plate having a top edge defining a chord of a circle.

4,367,990
CUTTING INSERT
Reuven Porat, Nahriya, and Elizer Nessel, Haifa, both of Israel, assignors to Iscar Ltd., Nahariya, Israel
Filed Jul. 14, 1980, Ser. No. 168,904
Claims priority, application Israel, Aug. 8, 1979, 58006
Int. Cl.³ B26D 1/00
U.S. Cl. 407—114 4 Claims

1. A disposable cutting insert having an upper and a substantially planar base face; side walls adjoining said faces; at least one cutting edge formed at an intersection of the upper face and a side wall; at least one cutting corner formed at an intersection of an adjacent pair of side walls; a chip control structure formed in said upper face extending along the cutting edge from the cutting corner for at least an effective cutting length of the cutting edge; a land surface spacing said control structure from the cutting edge; said control structure comprising first and second descending surfaces respectively extending in the direction of said cutting edge; a first chip deflector surface between said descending surfaces and merging therewith; one or more further chip deflector surfaces extending between said

second descending surface and a central portion of said upper face; said land descending and deflector surfaces having, in general, a substantially downwardly directed slope with respect to the base face in the direction of the cutting edge and from the cutting corner at least over said effective cutting length said land and first descending surfaces increasing in width from said cutting corner and at least along said effective cutting length; said first descending surface sloping with respect to said land surface by an angle which decreases from



said cutting corner along said effective cutting length; said chip control structure constituting a stepped cavity of which said land surface is the rim and said central portion the base such that along every radial section line directed centrally through and in the direction of said central portion no surface is directed upwardly with respect to a preceding surface whilst along every section line directed normally with respect to said cutting edge and at least over the effective cutting length at least one further deflector surface slopes upwardly with respect to or is substantially parallel to the base surface.

4,367,991

BORING TOOL

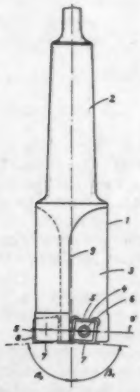
Werner Gräfe, Reutlingen, and Paul Held, Sonnenbühl-Willmandingen, both of Fed. Rep. of Germany, assignors to Montanwerke Walter GmbH, Tübingen, Fed. Rep. of Germany

Continuation of Ser. No. 13,989, Feb. 22, 1979, abandoned. This application Dec. 9, 1980, Ser. No. 214,532

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 2834083

Int. Cl.³ B23B *51/00*

U.S. Cl. 408—224 **18 Claims**



1. Boring tool to cut a hole in a workpiece having a tool body (1, 2) having a longitudinal central axis (9);

at least two radially staggered recesses (4) at the end face of the tool body;

a cutter bit (5) located in each recess (4) at the end face of the tool body, said cutter bits having positive axial angles (γ_a) with respect to said axis and each being located at different radial distances from the central axis (9);

said cutter bits (5) being, in plan view, generally square or parallelogram-shaped defining sides and corners and of truncated pyramidal shape, having main cutting edge (7) along sides of the large base of the truncated pyramid;

and means (6) to removably secure said cutter bits to the tool body and to permit presentation, selectively, of different cutting edges to a workpiece in accordance with the position of the cutter bits on the tool body;

wherein

at least the radially innermost cutter bit is formed with auxiliary cutting edges (10, 10*a*, 10*b*) at the corners adjacent the main cutting edges and connecting said main cutting edges at an obtuse angle with respect to said main cutting edges; wherein:

said radially innermost cutter bit is located on the body with the radially inner auxiliary cutting edge (10, 10*a*, 10*b*) intersecting said central axis (9);

wherein said cutter bits (5) are positioned on the tool body in radially overlapped position such that the main cutting edges (7) thereof will form with the central axis (9) of the tool, and taken in the direction of the cut or feed of the tool, lead angles (β_1, β_2) of less than 90° to locate the auxiliary cutting edges (10, 10*a*, 10*b*) at the radially outer corners of the respective bits axially in advance of the radially inner corners of the respective bit, and such that at least a portion of the radially outer auxiliary cutting edge (10, 10*a*, 10*b*) of a radially inner bit is located axially in advance of the main cutting edge (7) of the next radially outer bit at the radial position of said radially outer auxiliary cutting edge,

so that the main edges of said bits will cut shallow conical surfaces in the workpiece, the outer auxiliary cutting edges (10, 10*a*, 10*b*) will cut stepped grooves concentric with said central axis (9) and the radially inward auxiliary cutting edge of the radially innermost cutter bit will additionally cut across the central axis,

the overlap position of said cutter bits on the tool body (1) relieving the auxiliary cutting edges at the radially inner corner of the outer cutter bit or bits from cutting action due to removal of workpiece material at the respective radial position by the radially outer portion of the main cutting edge and the adjacent radially outer auxiliary cutting edge (10, 10*a*, 10*b*) of the adjacent radially inner cutter bit;

wherein the cutting action of the radially innermost cutter bit effects cutting into the workpiece with its main cutting edge in accordance with the cutting edge lead angle (β_1, β_2) and its radial position on the tool body,

the auxiliary cutting edge (10, 10*a*, 10*b*) at the radially outer corner of the innermost cutter bit, of which at least a portion is positioned axially in advance of, and radially outwardly with respect to, the auxiliary cutting edge of the radially inner corner of the adjacent radially outer cutter bit, cuts said stepped groove concentric with said control axis (9) to provide for self-centering of the tool within the bore; and wherein

the cutting action of a cutter bit adjacent a radially inner cutter bit effects cutting of the workpiece with its main cutting edge in accordance with its cutting edge lead angle (β_1, β_2) and its radial position on the tool body,

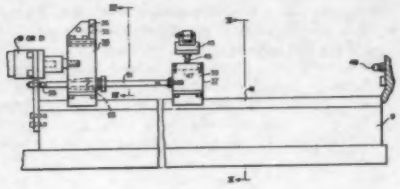
and the auxiliary cutting edge (10, 10*a*, 10*b*) of the radially outer corner of said radially outer cutter bit and being positioned axially in advance of the auxiliary cutting edge at the radially inner corner thereof additionally cuts a stepped groove concentric with said central axis to further enhance and support said self-centering of the tool.

4,367,992

BROACHING MACHINE

Daniel P. Soroka, Franklin, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 7, 1980, Ser. No. 175,975
Int. Cl.³ B23D 41/04
U.S. Cl. 409—264 4 Claims



1. A support system for a broach utilized in apparatus for broaching holes in a workpiece, said support system comprising:

a pulling head which attaches to a leading end of a broach and is utilized to pull the broach through the workpiece;

a trailing end support which supports the trailing end of the broach and is slidably disposed in the broaching apparatus;

an intermediate support, which supports the broach intermediate its ends and which is slidably disposed in the broaching apparatus;

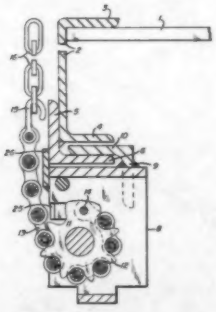
said intermediate support having a bridge portion slidably disposed thereon and means for moving said bridge portion downwardly as the intermediate support approaches the workpiece to allow the broach to slide thereover without contacting the intermediate support.

4,367,993

TRUCK LOAD BINDER TIGHTENER

William M. Meigs, 121 S. Drive, Pittsburgh, Pa. 15238

Filed Oct. 6, 1980, Ser. No. 194,760
Int. Cl.³ B60P 7/008
U.S. Cl. 410—103 10 Claims



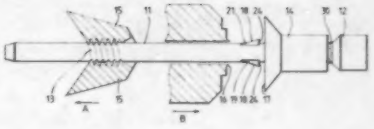
1. The combination with a truck bed having a side rail extending along the bed and provided at its bottom with a flange projecting inwardly beneath the bed, of a load binder tightener comprising a housing having spaced parallel side walls, a bracket secured to the housing and extending above it, the bracket extending outwardly in overlapping engagement with the upper surface of said rail flange, means secured to the housing for limiting movement thereof inwardly to prevent removal of said bracket from said rail flange, a shaft rotatably mounted in said housing side walls and projecting from at least one of said side walls and formed to receive a tool for turning the shaft, a sprocket rigidly mounted on the shaft between said side walls, a ratchet rigidly mounted on said shaft, a pawl pivotally connected to said housing and engaging the ratchet, a sprocket chain engaging the sprocket, whereby the chain can be wound on the sprocket when said shaft is rotated, a second rail above said first-mentioned rail and having at its bottom an inwardly projecting flange spaced above said first-mentioned flange, said first-mentioned rail being an angle bar with a vertical flange secured to the outer side of said second rail, and said bracket extending outwardly between said spaced inwardly projecting rail flanges.

4,367,994

BLIND FASTENER AND METHOD OF MANUFACTURE THEREOF

Albert C. Francis, Stevenage, and Frederick A. Summerlin, St. Albans, both of England, assignors to AERPAT A.G., Zug, Switzerland

Filed Aug. 4, 1980, Ser. No. 175,037
Claims priority, application United Kingdom, Aug. 14, 1979, 7928346
Int. Cl.³ F16B 19/10
U.S. Cl. 411—43 9 Claims



1. A blind fastener comprising a stem and a shell;

the stem having an enlarged head at one end and a pulling portion at the other end;

the shell including a first bore, the portion of the stem between the head and the pulling portion thereof extending through said first bore;

the fastener being adapted to be installed by relative movement between gripping means which grip the pulling portion of the stem and a nose having a second bore which surrounds the stem, so that the nose is advanced towards the shell and supports it at one end whilst the stem head is pulled into its other end to form a blind head;

the stem having at least one outward deformation at a position between the shell and pulling portion to retain the shell on the stem, said stem having a radius at the maximum radial height of said deformation which is greater than the radius of said first bore and greater than the radius of said second bore;

wherein said outward deformation has a relatively shallow sloping profile increasing progressively in the radial direction towards the enlarged head;

whereby while the fastener is being installed as aforesaid, the nose can move past the deformation by engaging the aforesaid relatively shallow sloping profile and pushing the deformation in towards the stem without carrying material away from the deformation to contaminate the shell.

4,367,995

QUICK-ACTING EXPANSIBLE FASTENER

Akira Mizusawa, Fujisawa, and Yoshiaki Notoya, Zushi, both of Japan, assignors to Nifco Inc., Yokohama, Japan

Filed Jul. 2, 1980, Ser. No. 165,401
Claims priority, application Japan, Jul. 6, 1979, 54-85043
Int. Cl.³ F16B 13/06
U.S. Cl. 411—57 8 Claims

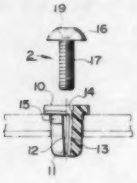
1. A fastening device for fastening two objects together each respectively having an aperture therethrough, the apertures being concentrically aligned, said device comprising:

a female member of a flexible synthetic resin and having a

body at one end thereof with a flange extending laterally therefrom and a leg, said leg being connected to one side of said body and having a free end longitudinally outwardly extending therefrom for being fitted into the apertures whereby said flange abuts one of the objects;

said female member having a bore therethrough longitudinally extending through said body and said leg;

said leg having at least one elongated groove through the peripheral wall thereof and longitudinally extending in the longitudinal direction of said leg and the peripheral wall of said bore in said body having at least one radially inwardly extending circumferentially discontinuous ridge integral with and of the same material as said body and having portions in diametrically opposite surfaces of said bore, and the inner surface of said bore in said leg being entirely smooth, for, when a shank having a larger diameter than said bore is inserted therein, having said ridge flex in the longitudinal direction of said bore and having said leg free end radially expand thereby securing the shank within said bore;



a male member made of a synthetic resin and having a head and a shank, said shank being connected to a first side of said head and having a free end longitudinally outwardly extending therefrom for, when an axial force is exerted on said head, being axially thrust into said bore and radially expanding said leg free end and for having said head first side abut said flange thereby fastening the two objects together between said flange one end and said leg free end; and

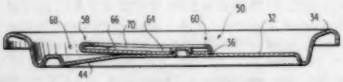
the circumferential surface of said shank having threads integral with and the same material as the shank for, when said shank is axially thrust into said bore, flexing in the longitudinal direction of said bore and, when said shank is secured within said bore and said head abuts said body and said flange, having said threads threadably engaging with said at least one ridge for, when said male member is rotated in one direction, threadably disengaging said male member from said female member thereby axially removing said shank from said bore.

4,367,996

TAB OPENER END CLOSURE ASSEMBLY METHOD

William T. Saunders, Weirton, W. Va., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed Feb. 11, 1981, Ser. No. 233,570
Int. Cl.³ B21D *51/00*
U.S. Cl. 413—14 **5 Claims**



1. Manufacturing method for an easy-open sheet metal endwall closure for a container, comprising

(A) providing a sheet metal endwall blank,

(B) fabricating such endwall blank for use as an easy-open endwall closure including the steps of

forming such blank to present a substantially planar panel,

scoring such panel to define a severable portion to be moved from the plane of such panel upon opening of a container, and

forming a rivet button in the panel for use in securing a tab opener to such panel,

(C) providing a sheet metal tab opener blank,

(D) fabricating such tab opener blank for use as a tab opener having an elongated configuration with a working portion and a handle portion at longitudinally opposite ends, including the steps of

folding over peripheral edge portions of such tab opener blank to form a double thickness of sheet metal with rounded edge at least around such handle portion and extending longitudinally along a major portion of the side edges of the tab opener blank toward such working end,

such edge metal being folded over in a direction to be disposed outwardly when assembled on an end closure with raw edge metal accessible after assembly,

and

forming an aperture near the working end of the tab opener for placement over a rivet button,

(E) placing such tab opener aperture over such rivet button in the panel portion of the end closure such that the folded-over edge metal of the fabricated tab opener is disposed outwardly, to provide for repair of such edge metal, when such end closure is prepared for assembly on a container,

(F) converting such rivet button to a rivet to secure the fabricated tab opener to the fabricated end closure, and then

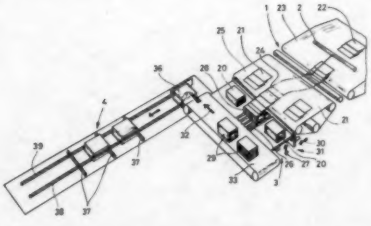
(G) applying protective coating to such end closure including repair of such raw edge sheet metal at the periphery of such tab opener.

4,367,997

DEVICE FOR CREATING BATCHES OF FLAT WORKPIECES SUCH AS BOX BLANKS

Hermann Schweingruber, Sullens, Switzerland, assignor to Bobst SA, Lausanne, Switzerland

Filed Oct. 2, 1980, Ser. No. 193,022
Claims priority, application Switzerland, Oct. 9, 1979, 9072/79
Int. Cl.³ B65H *31/30*
U.S. Cl. 414—38 **9 Claims**



1. A device for creating batches of flat workpieces especially box blanks comprising conveyor means for transporting the box blanks in at least one stream of staggered blanks in a transport direction, said conveyor means enabling adequate staggering of the box blanks in each stream; means for braking and separating the blanks in each stream of box blanks; means for removing box blanks having contingent flaws from the conveyor means; piling means for forming piles of box blanks from the stream of blanks in the conveyor means; removing means for removing the piles of box blanks created in said piling means; means for creating batches of box blanks from said piles; and means for transferring said piles of box blanks in an aligned fashion to said means for creating batches; said conveyor means including several conveyors assembled one after

another in the transport direction in a frame; said means for removing box blanks with contingent flaws including the last conveyor of said conveyor means in the transport direction being constructed to be pivoted around a drive roller from a conveyor position to a reject position and a reject receiving belt extending cross-wise to the transport direction being arranged adjacent said last conveyor to receive blanks as the conveyor is pivoted to the reject position; the means for braking and separating comprises a lower roll arranged between a pair of conveyors in said conveyor means, said lower roll being carried on a cradle mounted in said frame for movement along said transport direction, an upper pressure roller, means for moving the upper pressure roller from a position above said lower roll to a position pressing a blank therebetween, means for rotating the lower roll in one direction including a clutch, second means for rotating the lower roll in a direction opposite to the one direction of rotation, said second means being actuated by movement of said cradle in said frame in a direction opposite to the transport direction; said piling means including a front stop being mounted for adjustment in both a vertical direction and the transport direction, and means for determining the height of the blanks in the piling means; said means for removing the piles of blanks including a removable belt and a pusher for pushing said piles from said piling means onto the removal belt, said pusher means being actuated in response to the means for determining a predetermined height of said piles, said means for transferring the piles from the means for removing the piles to the means creating batches, aligning each of said piles and including means for rotating the piles through at least 90° in the plane of the blank and means for rotating the pile to stand on the edges of the blank, and said means for creating batches including a conveyor chain for moving the piles while standing on edge and joggers for shifting the piles into a delivery stations as batches of box blanks standing on edge.

4,367,998

MANIPULATORS

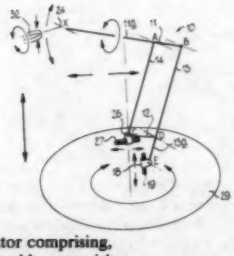
Roy Causer, Wantage, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Sep. 5, 1980, Ser. No. 184,304

Claims priority, application United Kingdom, Sep. 13, 1979, 7931801

Int. Cl.³ B25J *3/02*

U.S. Cl. 414—4 **7 Claims**



1. A manipulator comprising,

(a) a slave assembly comprising,

(i) first and second relatively short links, the first link being longer than the second link;

(ii) third and fourth relatively long links, the fourth link being longer than the third link, the first link and the second link each being pivotally connected to the third link and to the fourth link to form a four bar chain linkage, the pivotal connections being positioned so that the linkage has opposing members of equal length between pivots and in parallel relationship;

(iii) a portion of the first link extending away from the linkage at the pivotal connection of the first link with the third link;

(iv) a portion of the fourth link extending away from the linkage at the pivotal connection of the fourth link with the second link;

(v) two lead screw means extending in mutually perpendicular relationship in a common plane that includes the four bar chain linkage;

(vi) two nut means, one for each lead screw means, one said nut means being pivotally connected to the extending portion of the fourth link, the other said nut means being pivotally connected to the pivotal connection of the second link with the third link;

(vii) a member for connection to a jaw mechanism and pivotally connected to the extending portion of the first link, the pivotal connections of the jaw connection member and of the extending portion of the fourth link, and the pivotal connection of the second link with the third link, being arranged to lie in a common straight line; and

(viii) two electric stepping motors, one for each lead screw means, for rotating said lead screw means;

(b) a master assembly comprising an electric control means for controlling the electric stepping motors, and

(c) electric connection means for connecting the electric control means to the electric stepping motors.

4,367,999

APPARATUS FOR THE AUTOMATIC DISCHARGE OF PANELS FROM A MACHINING LINE

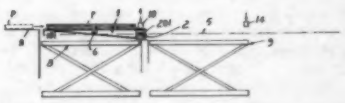
Gino Benuzzi, Bologna, Italy, assignor to Giben Impianti S.p.A., Pianoro, Italy

Filed Oct. 10, 1980, Ser. No. 195,820

Claims priority, application Italy, Oct. 12, 1979, 12771 A/79

Int. Cl.³ B65H *29/48*

U.S. Cl. 414—51 **4 Claims**



1. Apparatus for the automatic discharge in a horizontal transfer direction of panels from a workpiece support (A) at the end of a machining line, comprising

(a) first and second support tables (**8, 9**) movable upwardly and downwardly and sequentially arranged in said horizontal transfer direction;

(b) a tilting table (**1**) mounted for to-and-fro movement with respect to said workpiece support in said horizontal transfer direction, said tilting table having a single discharge edge (**101**) facing said workpiece support;

(c) said tilting table being tiltable about an horizontal axis transverse to said transfer direction, from a loading position in which the upper surface of said tilting table is substantially coplanar with said workpiece support, to a discharge position in which said upper surface is inclined downwardly and said discharge edge is adjacent to the effective upper surface of a said support table disposed beneath said tilting table;

(d) abutment means (**10, 14**) comprising a horizontal bar arranged transversely to said transfer direction cooperating with said upper surface of said tilting table to prevent panels on said tilting table from following its transfer direction movement, whereby said panels are caused to be discharged over said discharge edge onto a said support table disposed beneath said tilting table, a said abutment means being provided above the end of each of said first and second support tables which is downstream with respect to said workpiece support; and

(e) actuating means (12) for causing the lifting of said first abutment bar to a height sufficient to permit the passage therebeneath of said tilting table when loaded with panels to be discharged onto said second support table.

4,368,000

BALE WAGONS

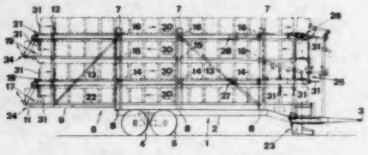
Adrianus Naaktgeboren, and Marc G. Vansteelant, both of Zedelgem, Belgium, assignors to Sperry Corporation, New Holland, Pa.

Filed Jul. 1, 1980, Ser. No. 165,160

Claims priority, application United Kingdom, Jul. 4, 1979, 7923323

Int. Cl.³ A01D *87/12*

U.S. Cl. 414—111 **29 Claims**



1. In a bale wagon having:

(a) a mobile main frame having a predetermined width and length;

(b) bale pick-up means forming a subframe mounted to the main frame at one side of the bale wagon, said bale pick-up means being movable between an operative and an inoperative position transversely of the bale wagon such that at least part of the pick-up means is contained in the inoperative position within the width of the bale wagon so as to reduce the overall width of the bale wagon for transport purposes;

(c) bale elevator means mounted to the subframe operable to lift a bale from the ground upon being engaged thereby;

(d) conveyor means connected to the main frame effective to receive bales from the elevator means, the conveyor means further comprising at least a first conveyor means and a second conveyor means operable to handle a bale successively imparting a first direction of movement and a second direction of movement thereto so that said directions of movement lie in different planes inclined relative to and intersecting each other.

4,368,001

MACHINE, PARTICULARLY FOR LOADING AND UNLOADING CERAMIC MATERIAL ON TO AND FROM STAKE TRUCKS

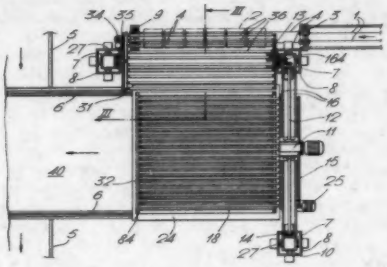
Dario Carraroli, Modena, Italy, assignor to Carfer S.r.l., Modena, Italy

Filed Oct. 24, 1980, Ser. No. 200,601

Int. Cl.³ B65G *67/02, 39/02*

U.S. Cl. 414—331 **6 Claims**

1. Ceramic material loading and unloading apparatus for loading and unloading a plurality of lines of ceramic material articles onto and from stake trucks having horizontal support rails, said apparatus comprising, a flat horizontal roller table composed of a plurality of spaced apart coplanar rollers, means supporting said rollers of said table for simultaneous movement vertically, motor means for rotating said rollers to feed a line of ceramic articles transversely across said table, means for feeding lines of aligned ceramic material articles onto said first table, comprising, a second horizontal roller table beside and generally coplanar with said first table and composed of a plurality of spaced apart rollers parallel to the rollers of the first table, motor means for rotating said rollers of said second table to advance a line of ceramic material articles transversely to said first table, the rollers of said second table having an effective length essentially the same as the rollers of the first table, means supporting the rollers of said second table for simultaneous vertical movement with the rollers of the first table, feed means for feeding a line of ceramic articles onto said second table, said feed means comprising, a pair of spaced apart V-belts parallel with the rollers of said second table, means for supporting said V-belts, means for moving said second table and said support means for said V-belts vertically relative to each other between a first position in which an uppermost surface of the V-belts is above the rollers and ceramic articles can be conveyed on the V-belts to a position



above the rollers, and a second position in which the uppermost surface of the V-belts is below the uppermost surface of the rollers to deposit the ceramic articles onto the rollers of the second table, motor means for driving said V-belts to convey a line of ceramic articles to a position above the rollers of the second table, means for feeding a line of ceramic articles to said V-belts and comprising, a conveyor having an end pivotally connected to the support means for the V-belts and generally aligned with the V-belts, and means for driving said conveyor to feed ceramic articles one by one to said V-belts.

4,368,002

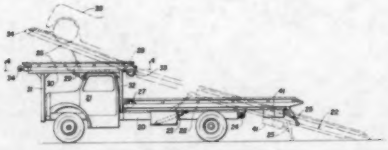
CAR CARRIER

Andrew Kryzyosiak, Jr., Chambersburg, Pa., assignor to Jerr-Dan Corporation, Greencastle, Pa.

Filed Mar. 2, 1981, Ser. No. 239,446

Int. Cl.³ B60P *3/008, 1/014*

U.S. Cl. 414—494 **8 Claims**



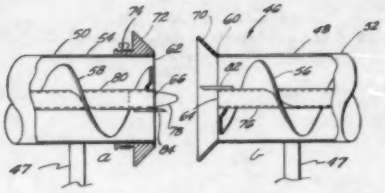
1. In a car carrier of the type which includes an above-cab tiltable car support platform, a cable winch attached in underslung relation to the rearward end portion of such platform behind the cab, a cable guide sheave, means mounting said cable guide sheave for swivel movement to the forward end of the platform on an axis parallel with the longitudinal axis of the platform, a winch cable leading forwardly from the winch beneath the platform and around the sheave and then upwardly and rearwardly for attachment to a car being winched onto said platform, and said sheave and winch both movable with said tiltable support platform whereby the arrangement assuring the same attitude between said sheave and winch at all times and a constant cable lead distance at all times between the load and the winch and also assuring a proper cable fleet angle which is maintained constant.

4,368,003

FOLDABLE FARM IMPLEMENT WITH SINGLE PORT HOPPER-FEEDING AUGER

John T. MacDonald, R.R. #2, Box 1634, Paulding, Ohio 45879

Filed Nov. 28, 1980, Ser. No. 211,074
Int. Cl.³ A01B 65/02; B60P 1/40
U.S. Cl. 414—523 **6 Claims**



1. In combination, a foldable farm implement and hopper-feeding auger comprising an elongated hopper-supporting frame in three separable sections in end-to-end relation, a draw bar secured to and transversely extending from the central of said sections, first means pivotally connecting the opposite ends of said central section to the adjacent ends of the outboard sections, respectively whereby said outboard sections may be pivoted between a first position in which said three sections are aligned and a second position in which said outboard sections are generally parallel to said draw bar, a plurality of hoppers carried by said sections, an elongated tubular conveyor in two separable length portions carried by said two outboard sections, respectively, said length portions being disposed above said hoppers in feeding relation thereto and extending parallel to said frame sections when said outboard sections are in said first position, said conveyor portions including two tubular elements which receive two rotary augers, respectively, the adjacent ends of said tubular elements being joined and said augers drivably connected to rotate in unison when said outboard sections are in said first position and said tubular elements being separated and said augers disconnected when said outboard sections are in said second position, said tubular elements having material-discharge openings in register with said hoppers, respectively, and second means on the outboard end of one conveyor length portion only for introducing flowable granular material into said conveyor which conveys such material through both length portions to said hoppers, respectively, when said outboard sections are in said first position.

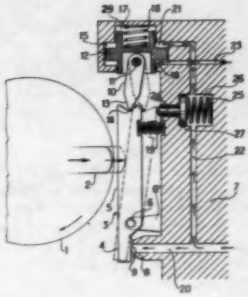
4,368,004

APPARATUS FOR PREVENTING A TURBINE FROM EXCEEDING A PREDETERMINED VALUE OF A MONITORED PHYSICAL MAGNITUDE

Andre Lapart, Le Blanc Mesnil, France, assignor to Societe Anonyme dite: Alsthom-Atlantique, Paris, France

Filed Oct. 27, 1980, Ser. No. 200,624
Claims priority, application France, Oct. 25, 1979, 79 26488
Int. Cl.³ F01B 17/06
U.S. Cl. 415—39 **9 Claims**

1. An apparatus for preventing a turbine from exceeding a predetermined value of a monitored physical magnitude, said apparatus including: a stationary frame, a stop, monitoring means, an over-center toggle lever pivotally mounted on a pivot point on said stationary frame, said lever being capable of occupying either one of two stable positions, one of which is a cocked position in which it abuts against said stop, said cocked position corresponding to normal operation of the turbine, the other position being a tripped position which corresponds to abnormal operation of the turbine, said toggle lever being tripped to the tripped position when said monitoring means detect that the predetermined value of said physical magnitude has been exceeded, said tripped position of the lever causing turbine admission units to close, said apparatus also including; a piston guided within a cylinder, a connecting rod having one end pivotally mounted to an end of the toggle lever which is remote from the pivot point of the toggle lever on the frame, and the other end of the connecting rod being pivotally mounted on said piston guided in said cylinder, a spring permanently subjecting said piston to a compression force directed towards the connecting rod and the toggle lever, the toggle lever when in the cocked position forming an angle of about



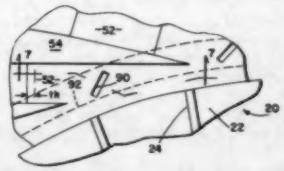
180° with the connecting rod, said frame and apparatus assembly being resilient so that in the event of the piston seizing in the cylinder, the toggle lever can still be moved to the tripped position and said apparatus includes closing control means actuated by the toggle lever itself when it moves from the cocked position to the tripped position, even when the piston is seized, for controlling the closing off of fluid admission units to said turbine.

4,368,005

ROTARY COMPRESSORS

John T. Exley, Milford; Charles Kuintzle, Jr., Monroe, and David L. Tate, Stratford, all of Conn., assignors to Avco Corporation, Stratford, Conn.

Division of Ser. No. 795,058, May 9, 1977, Pat. No. 4,164,845, which is a continuation-in-part of Ser. No. 515,115, Oct. 16, 1974, abandoned. This application Nov. 16, 1978, Ser. No. 961,317
Int. Cl.³ F04D 29/44
U.S. Cl. 415—207 **4 Claims**



1. A compressor stage for pressurizing compressible fluids, comprising:

a bladed radial flow impeller;

an annular radial flow diffuser having its inner periphery closely surrounding the discharge end of said impeller, said diffuser including a vaneless annular entrance space for receiving the fluid discharged from said impeller, said entrance space being formed by first and second spaced apart walls, said diffuser also including a plurality of intersecting passageways extending outwardly from said annular entrance space in a tangential direction from the inner periphery of said diffuser, said passageways being formed by wedge-shaped vanes symmetrically disposed between said spaced apart walls, each of said passageways having a

convergent entrance portion followed by a throat section of constant cross section downstream of which is an area of expanding cross section extending toward the exhaust end of each of said passageways; and

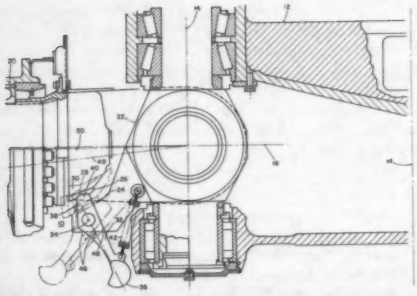
flow equalizing means for stabilizing the flow of fluid through said diffuser passageways, said flow-equalizing means including elongated transverse slots formed in the first spaced apart wall of the diffuser, said slot being located in the throat section of each of said passageways and extending along a line of equal pressure within said passageway, each of said slots communicating with a closed common manifold constructed in said first diffuser wall, whereby fluid flowing both into and out of said manifold via the slots serves to equalize the pressure in all of said passageway throat sections.

4,368,006

DROOP STOP FOR FULLY ARTICULATED ROTOR

Donald L. Ferris, Newtown, and Robert C. Rybicki, Trumbull, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 7, 1980, Ser. No. 176,151
Int. Cl.³ B64C *27/40*
U.S. Cl. 416—140 **1 Claim**



1. In a droop stop mechanism for a fully articulated rotary wing aircraft of the type having a rotor drive shaft, a hub rotatable by said shaft, and a blade pivoted in said hub for flapping movement about a flapping axis; said mechanism including a vertical hinge rotatable with said shaft and having an abutment beneath said blade, a spindle pad fixedly mounted at the root of said blade above said abutment, and a pendulum member pivotally connected as a point intermediate its ends on said vertical hinge in position to rotate by action of centrifugal force, said pendulum member having a fly weight on its lower end and a bearing surface on its upper cam end, said mechanism further including a tension spring connected at one of its ends to said vertical hinge and at the other of its ends to the lower end of said pendulum member, the improvement includes:

said blade mounted spindle pad having three contact surfaces comprising: a first generally flat surface acting as the dynamic stop; a generally cylindrical surface acting as the static stop; a second generally flat surface acting as a disengage means, wherein said second surface is contiguous with said generally cylindrical surface of said spindle pad with said cylindrical surface located relatively inboard; and

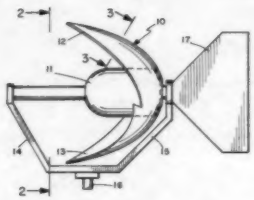
a hub mounted pendulum member having two contact surfaces; a dynamic surface and a static surface; said dynamic surface being flat and in alignment to contact said first flat surface of said spindle pad, said static surface being generally cylindrical and in alignment to contact said generally cylindrical surface of said spindle pad with said two generally cylindrical surfaces having the radial center thereof the pivot point of said pendulum member wherein the transition point of said second flat surface and said generally cylindrical of said spindle pad is located to form angle with the line to the pivot point of said pendulum member and a line normal to said second flat surface of said spindle pad; and said angle having tangent thereof exceeding coefficient of friction of the droop stop contacting members.

4,368,007

FLUID DRIVEN TURBINE

Walter K. Ely, 2445 Raymond Ave., Ramona, Calif. 92065

Filed Oct. 10, 1980, Ser. No. 196,130
Int. Cl.³ F03D *1/06*
U.S. Cl. 416—238 **5 Claims**



1. A fluid turbine rotor comprising:

a central hub having a generally spheroid configuration mounted for rotation about an axis;

a plurality of forwardly curved self supporting wind blades having a base and an outer tip and mounted at said base on said hub,

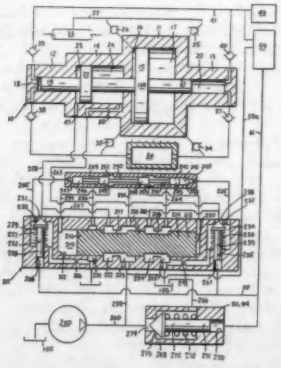
said wind blades each having a relatively wide base tapering down substantially to a point at the outer tip, each blade curving and extending forwardly along said axis with increase in radius from said base to said point at said outer tip with said tip positioned forward of said base with said tip pointing substantially parallel to said axis.

4,368,008

RECIPROCATING CONTROLS OF A GAS COMPRESSOR USING FREE FLOATING HYDRAULICALLY DRIVEN PISTON

Tadeusz Budzich, 80 Murwood Dr., Moreland Hills, Ohio 44022

Filed Feb. 10, 1981, Ser. No. 233,218
Int. Cl.³ F04B *49/00, 3/00, 17/00*
U.S. Cl. 417—46 **10 Claims**



1. A double acting compressor drive system comprising a free floating piston assembly having at least one gas compres-

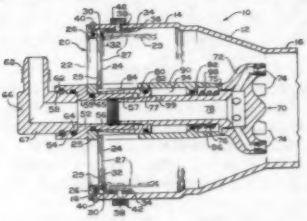
sion piston means provided with compressed gas outlet means, and hydraulic drive means having first and second chambers and hydraulic piston means operable to transmit a reciprocating motion to said gas compression piston means, a pump having a discharge outlet, exhaust means, control valve means operable to sequentially connect said first and said second chamber with said discharge outlet and said exhaust means at the end of each compression stroke, and relief valve means interposed between said pump and said exhaust means having means operable to maintain a relatively constant pressure differential between pressure in said discharge outlet and pressure in said compressed gas outlet means once said pressure in said discharge outlet exceeds pressure in said compressed gas outlet means by the amount of said relatively constant pressure differential.

4,368,009

ASPIRATOR

John F. Helmovics, Jr., Akron, and Peter P. Seabase, Cuyahoga Falls, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Aug. 15, 1980, Ser. No. 178,430
Int. Cl.³ F04F *5/48*
U.S. Cl. 417—191 **8 Claims**



1. An aspirator for inflating a flexible, inflatable product such as a raft, evacuation slide or the like comprising a housing, a nozzle assembly disposed within said housing, means for introducing gas under pressure into said nozzle assembly, an air inlet at the end of said housing, a valve assembly controlling said inlet comprising valve member movable in the downstream direction and into said housing to open said inlet and in the upstream direction to close said inlet, a locking device disposed within said housing adjacent said nozzle assembly, means within said housing and downstream of said locking device to bias said locking device into engagement with said valve members, and means within said housing and downstream of said locking device, responsive to gas under pressure introduced to said nozzle assembly, to move said locking device out of engagement with said valve members.

4,368,010

APPARATUS FOR ADMITTING LIQUID TO THE VESSELS OF DEVELOPING MACHINES FOR PHOTOSENSITIVE MATERIAL

Walter Kohlbauer, Kaufbeuren, and Günter Schirk, Munich, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 25, 1980, Ser. No. 172,393
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1979, 2931050; Jul. 31, 1979, 7921875[U]
Int. Cl.³ F04B *27/02*; F16J *11/02*; F01B *1/06*
U.S. Cl. 417—271 **22 Claims**

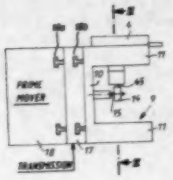
1. Fluid conveying apparatus, particularly for conveying several discrete fluid streams comprising:

(a) a support;

(b) at least one pumping unit mounted on said support, said unit including a housing having a pumping chamber, and said housing further having a fluid inlet and a fluid outlet which communicate with said chamber, said unit also including a reciprocable pumping element for pumping fluid through said chamber;

(c) drive means connected with said support and having a rotary cam directly engaging said element to move the latter in response to operation of said drive means;

(d) a plurality of first coupling means on said support for engaging a corresponding plurality of pumping units; and



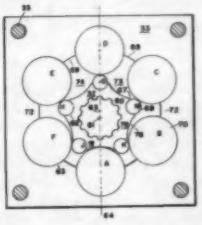
(e) second coupling means on said housing cooperating with a selected one of said first coupling means to removably mount said unit on said support, said second coupling means and said selected first coupling means together defining a connection of the tongue-and-groove type.

4,368,011

CYLINDRICAL TOOTH SET HAVING A CONCAVE SOCKET AND A CYLINDRICAL TOOTH ENGAGING EACH OTHER ON THE TRANSVERSE LINE OF ECCENTRICITY

George V. Woodling, 22077 Lake Rd., Rocky River, Ohio 44116

Filed Oct. 14, 1980, Ser. No. 196,740
Int. Cl.³ F01C *1/113*; F16H *1/28, 55/10*
U.S. Cl. 418—61 B **10 Claims**



1. A cylindrical tooth set comprising an axleless rotor tooth member having a longitudinal rotor axis, a stator tooth member surrounding said rotor tooth member and having a longitudinal stator axis substantially parallel to said rotor axis, said rotor axis and said stator axis being mutually spaced apart from each other and defining a transverse line of eccentricity passing therethrough, said axleless rotary tooth member being internally unsupportable, the longitudinal axis of one of said tooth members being disposed to move in an orbital cycle about the longitudinal axis of the other of said tooth members, said rotor tooth member having an outer face, said outer face having said rotor axis as a center, said stator tooth member having an inner face, said inner face having said stator axis as a center, said rotor tooth member having mounted therein a plurality of rotor cylindrical teeth projecting outwardly from said outer face thereof, all of said rotor teeth having substantially the same rotor tooth diameter and being spaced apart one from the other in a circumferential direction, said stator tooth member having mounted therein a plurality of stator cylindrical teeth projecting inwardly from said inner face thereof, said rotor teeth being one less in number than the number of said stator teeth, all of said stator teeth having substantially the same stator tooth diameter and being spaced apart one from the

other in a circumferential direction, said rotor and stator teeth being disposed to intermesh with each other and form expandable and contractable fluid chambers therebetween, said rotor tooth member defining a plurality of rotor body portions between the rotor teeth thereof, all of said rotor body portions having substantially the same circumferential width and respectively being provided with a longitudinal concave socket, one of said concave sockets being referred to as a middle concave socket and one of said plurality of cylindrical stator teeth being referred to as a middle stator tooth, said middle concave socket and said middle stator tooth being disposed to provide a concave-to-convex contact relationship therebetween, said middle stator tooth in said contact relationship defining an individual stator tooth axis, said concave socket in said relationship defining an individual socket axis, said transverse line of eccentricity passing through said individual stator tooth axis and said individual socket axis, said concave sockets respectively defining a socket diameter greater than the diameter of said stator teeth.

4,368,012

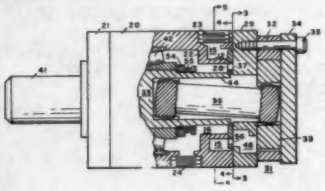
FLUID PRESSURE ASSEMBLY HAVING A VALVE DISK MEMBER WITH IDENTICAL FLAT SIDES

George V. Woodling, 22077 Lake Rd., Rocky River, Ohio 44116

Continuation of Ser. No. 58,788, Jul. 19, 1979, abandoned. This application Dec. 15, 1980, Ser. No. 216,856

Int. Cl.³ F01C *1/10*; F03C *2/08*; F04C *2/10*

U.S. Cl. 418—61 B **2 Claims**



1. In a fluid pressure assembly including outer and inner relatively rotatable body members forming expandable and contractable piston chambers and including oppositely pressurized fluid ports whereby when one is pressurized the other is at an exhaust pressure, said body members each having a body axis, said body axis of one of said rotatable body members being referred to as a reference axis, a fluid valve mechanism for commutatively connecting said piston chambers in fluid communication with said fluid ports and including a reference body encompassing said reference axis, a rotary valve member rotatable about said reference axis, a stationary valve member having a stationary valve face axially spaced from said reference body, said stationary valve member being positioned on said reference axis between said rotary valve member and said piston chambers and being provided with a plurality of fluid conducting openings arranged in a ring about said reference axis and in constant fluid communication with said piston chambers, said rotary valve member being disposed between said stationary valve face and said reference body and having a central drive socket, a load shaft driven by said inner rotatable body member, said load shaft including a shaft extension axially extending into said central drive socket of said rotary valve member and defining a non-rotatable drive connection therewith for driving same, said rotary valve member comprising a round wafer body having identical flat wafer sides, said wafer body having an axial width extending from said stationary valve face to said reference body, one of said wafer sides being referred to as a valve side sealingly engaging said stationary valve face and defining therewith a commutating interface valve having a large interface area, the other of said wafer sides being referred to as a ring side including a ring seal portion sealingly engaging said reference body and defining therewith an interface fluid seal having a small interface area as compared to that of said commutating interface valve, said ring side of said wafer body having a radially extending outer ring part exposed to fluid pressure in one of said fluid ports and a radially extending inner ring part exposed to fluid pressure in the other of said fluid ports, said wafer body having an outer and an inner series of commutating fluid conducting spaces extending transversely therethrough, said outer series extending transversely from said outer ring part to said valve side and being arranged in an outer ring about said reference axis, said inner series extending transversely from said inner ring part to said valve side and being arranged in an inner ring about said reference axis, said outer and inner series of fluid conducting spaces being alternately disposed in a circumferential direction with respect to each other and being adapted to connect commutatively said fluid ports to said fluid conducting openings in said stationary valve face, said ring seal portion comprising a circular blank surface disposed radially between said outer and inner series of said fluid conducting spaces, said fluid conducting spaces in each of said series being one less in number than the number of said fluid conducting openings in said stationary valve face, each of said fluid conducting spaces being defined by a fluid conducting transverse wall extending through said wafer body, said transverse wall being aligned in a direction perpendicular to said identical sides of said wafer body to facilitate ease of manufacture of said wafer body on a production basis.

4,368,013

GEAR MOTOR WITH FLUID PRESSURE GROOVE AND RECESS TO FACILITATE STARTING

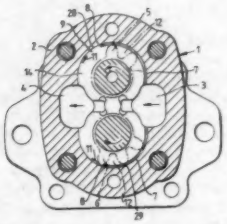
Graham J. Toogood, Cheltenham, England, assignor to Dowty Hydraulic Units Limited, Cheltenham, England

Filed Jun. 10, 1980, Ser. No. 158,152

Claims priority, application United Kingdom, Jun. 19, 1979, 7921351

Int. Cl.³ F01C *1/18, 21/12*; F03C *2/08*

U.S. Cl. 418—74 **10 Claims**



1. A fluid-pressure-operable gear motor including a casing, having an inlet port and an outlet port, at least two intermeshing rotors of toothed form housed for rotation in said casing, means for conducting pressure fluid derived from said inlet port as far as a predetermined position in a face disposed adjacent, and engaged by, a side of one of said rotors, and a recess, which is formed in said face, which is disposed intermediate said predetermined position and said outlet port and which is open only to the intertooth spaces of said one rotor which successively pass said recess during operation of the motor, the pitch of the rotor teeth and the distance between said recess and said predetermined position being such as to ensure that when the motor is at a predetermined minimum torque condition a tooth of said one rotor is in registry with said recess and the following tooth of said one rotor is adjacent said means so that for facilitating starting of the motor when fluid under high pressure is directed into said inlet port some of that fluid can gain access to said recess by way of said means and an intertooth space of said one rotor through which said means and said recess are in communication.

4,368,014

APPARATUS FOR PRODUCING VULCANIZED BELTS WITH STEEL REINFORCEMENT

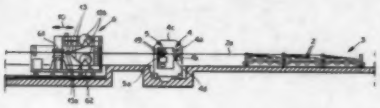
Winfried Moitzfeld, Krefeld, Fed. Rep. of Germany, assignor to G. Siempelkamp GmbH & Co., Krefeld, Fed. Rep. of Germany

Filed Oct. 2, 1981, Ser. No. 307,947

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1980, 3037611

Int. Cl.³ B29C *17/02;* B29D *29/02;* B29H *7/22*

U.S. Cl. 425—28 B 4 Claims



1. In an apparatus for the fabrication of steel-wire reinforced belts of vulcanizable material along a belt-fabrication path, said apparatus comprising in succession along said path, a reel frame form with a plurality of individual wire reels for delivering respective reinforcing wires to said path, a wire clamp engageable with said wires to retain the same, a wire tensioning device engageable with said wires to traction same, a layer-applying station for applying at least one layer of vulcanizable material to said wires, a vulcanizing press receiving a composite formed by said material and said wires to press the same into a belt, traction clamping means for drawing said belt from said press and displacing said wires along said path from said reel frame, and a take-up coil for receiving said belt from said traction clamp,

the improvement wherein said wire clamp is disposed directly ahead of said frame on each of said reels is provided with a slip clutch and means for driving an input side of said slip clutch in a sense opposite the sense of rotation of said reel by said traction clamp, thereby eliminating slack in said wires.

4,368,015

TIRE VULCANIZER

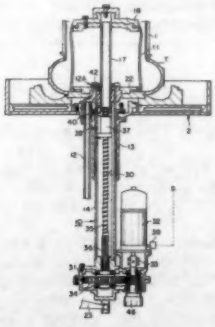
Masakatsu Kawahara, Amagasakishi; Itaru Amano; Kazuhiko Nakagawa, both of Kobe; Yasuhiko Fujieda, Akashi; Kashiro Ureshino, and Mitsunori Asada, both of Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Aug. 21, 1981, Ser. No. 295,146

Claims priority, application Japan, Aug. 23, 1980, 55-116807; Aug. 23, 1980, 55-116808; Aug. 23, 1980, 55-116809; Nov. 22, 1980, 55-165493

Int. Cl.³ B79H *5/02*

U.S. Cl. 425—29 11 Claims



1. A tire vulcanizer including a mutually closable upper and lower mold unit and a horizontally expandable elastic mold, and adapted to cure a green tire to be inserted within a hollow spacing defined by said upper and lower mold units while shaping the inner configuration of the green tire by virtue of said elastic mold and a heating and inflating medium to be charged into said hollow spacing, said vulcanizer comprising:

a lower ring for holding the lower extremity of said elastic mold;

an upper ring for holding the upper extremity of said elastic mold and capable of moving vertically relative to said lower ring;

a cylinder coupled in a vertically displaceable fashion with said lower ring;

means for vertically displacing said upper ring wherein said means further comprises rotary means disposed within said cylinder having a ball screw shaft, a nut cylinder threaded on said ball screw shaft, means for converting rotary motion of said rotary means to rectilinear motion, means for revolving said ball screw shaft, and means for stopping the rotation of said ball screw shaft; and

control means for deactivating said stopping means in association with motion to lower said upper mold unit after the completion of the vulcanization and shaping of said green tire.

4,368,016

APPARATUS FOR FEEDING A CANDY FILLING FORCED OUT OF A CONVEYOR INTO A ROD FORMING APPARATUS

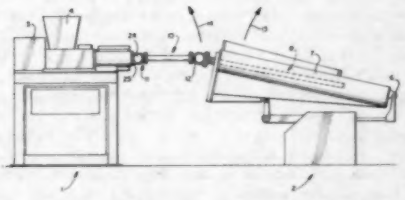
Roland Zoller, Karlsruhe, Fed. Rep. of Germany, assignor to Wiesert, Loser & Sohn GmbH & Co., Karlsruhe, Fed. Rep. of Germany

Filed Feb. 27, 1981, Ser. No. 238,986

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1980, 8022820[U]

Int. Cl.³ A23G *3/10, 3/12, 3/22;* B29F *3/02*

U.S. Cl. 425—94 27 Claims



1. An apparatus for feeding a hard candy filling forced out of a conveyor means into a rod forming means having conical rollers for forming a candy composition into a final shape, comprising:

(1) tube means for feeding said hard candy filling into said rod forming means to a space between said conical rollers;

(2) rigid pipe means disposed between an outlet of said conveyor means and an inlet of said tube means, said rigid pipe means being able to withstand the pressures produced in the conveyor means to pass the hard candy filling through the tube means and into said rod forming means; and

(3) mounting means hingedly mounting respective ends of said pipe means to the conveyor means and the tube means.

4,368,017

APPARATUS FOR FILM EXTRUSION COMPRISING ROTARY DIE PARTS

Ole-Bendt Rasmussen, 7, Topstykket, 3460 Birkerood, Denmark

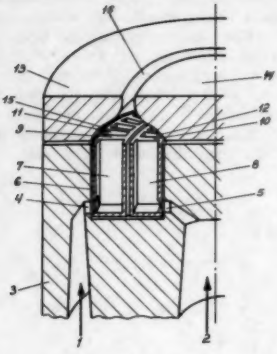
Division of Ser. No. 803,896, Jul. 6, 1977, abandoned, which is a division of Ser. No. 592,273, Jul. 1, 1975, Pat. No. 4,039,364.

This application Aug. 13, 1980, Ser. No. 177,808

Claims priority, application United Kingdom, Jul. 5, 1974, 29807/74; Dec. 11, 1974, 53644/74

Int. Cl.³ B29D 7/04

U.S. Cl. 425—131.1 **3 Claims**



1. Apparatus suitable for forming a laminate by coextrusion comprising a circular coextrusion die having an exit slot, separate passage-defining means in said die upstream of said slot for feeding towards the slot at least two separate and distinct concentric tubular layer-form streams of at least one molten polymeric material, means for rotating said separate passages and the streams therein relative to one another in the die and for simultaneously melt stretching each stream substantially in one direction, which intersects with the direction of the other stream, further passage-defining means in said die intermediate each first mentioned passage-defining means for feeding between said two concentric tubular streams and concentric therewith at least one separate generally tubular stream of a polymeric material different from each polymeric material of said concentric tubular streams, separate generally annular polymeric material-delivering means for each of said respective polymeric materials arranged in concentric relationship for communication with the respective passage-forming means, means for uniting the streams in a common passage in the die prior to their immergence from the exit slot, and means for solidifying the united stream with their intersecting stretching directions intact, said further passage-defining means including two substantially annular branches for generating two separate tubular streams of said different polymeric material, each said branch merging with the adjacent side of a separate one of said first-mentioned separate passage-defining means upstream of said common passage, whereby each of said streams of different polymeric material is joined with one of said first tubular streams to form a composite sandwich-like stream therewith, which composite sandwich-like stream undergoes melt-stretching as a whole combined with rotation relative to the other composite stream.

4,368,018

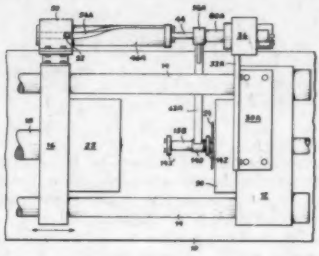
TRANSPORTER FOR INJECTION-MOLDED PARTS OR INSERTS THEREFOR

Herbert Rees, Willowdale, and Klaus B. Fritzsche, Aurora, both of Canada, assignors to Husky Injection Molding Systems Inc., Bolton, Canada

Filed Oct. 14, 1981, Ser. No. 311,452

Int. Cl.³ B29C 7/00; B29F 1/14

U.S. Cl. 425—138 **11 Claims**



1. In an injection-molding machine including a pair of relatively reciprocable platens carrying respective mold portions, a transporter for transferring articles between at least one of said mold portions and an external location, and drive means synchronized with the relative displacement of said platens for inserting said transporter between said mold portions in a mold-open position and removing said transporter during a mold-closing stroke to said external location,

the improvement wherein said drive means comprises:

a structure rigid with one of said platens;

a shaft journaled on said structure, said shaft extending in the direction of selective platen reciprocation toward the other of said platens;

a rotary member on said structure coaxial with said shaft and positively connected with said transporter;

a rotary cam on an end of said shaft remote from said one of said platens, said cam having a cylindrical surface with a generally helicoidal cam track engaged by a cam follower rigid with said other of said platens whereby said shaft is rotated in one sense during a mold-closing stroke and in the opposite sense during a mold-opening stroke, said cam track terminating in two axially extending extremities holding said shaft stationary in a final phase of each of said strokes; and

clutch means on said structure selectively operable to couple said rotary member to said shaft for moving said transporter in a plane transverse to said shaft away from the path of said platens toward said external location during a mold-closing stroke and toward said path during a mold-opening stroke.

4,368,019

COMPACT DOUGH DIVIDER AND FORMING MACHINE

Daniel T. Thompson, 1141 Napoli Dr., Pacific Palisades, Calif. 90272

Continuation-in-part of Ser. No. 183,187, Sep. 2, 1980, Pat. No. 4,336,010. This application Oct. 1, 1981, Ser. No. 307,508

Int. Cl.³ A21C 11/10, 7/06; B29C 15/00

U.S. Cl. 425—141 **33 Claims**

1. A dough batch receiving, shaping, dividing and forming machine for making dough bodies of predetermined size and configuration from an initially unshaped batch of dough in a continuous manner, said machine comprising:

An infeed conveyor for receiving a batch of unshaped dough and conveying it to a preshaping location;

a pair of top and bottom preshaping and dough advancing means for preshaping said batch into a uniform height and

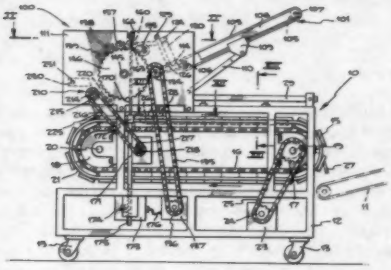
advancing said batch from between said width shaping means to a divider location;

dough divider means at said divider location for receiving said dough batch in a preshaped configuration, shaping it to a generally retangular cross section strip of dough and advancing the strip to a cut-off location;

dough cut-off means at said cut-off location for dividing said strip into generally rectangular cross-section parts of determinable length, separating such parts in sequence from said strip and delivering them individually to a forming location; and

dough forming means at said forming location for receiving individual dough parts of generally rectangular cross section and forming them into a desired configuration such as toroidal,

drive means for operating said dough divider means in an



intermittent dough advancing manner to advance said strip, in a intermittent motion manner to said cut-off location,

said drive means being a variable drive means for operating said infeed conveyor and said top and bottom preshaping and dough advancing means at selectably varying speeds of dough batch advancement,

said variable drive means including dough batch engaging and height sensor means for sensing the height of the said dough batch after it leaves said top and bottom preshaping and dough advancing means in preshaped configuration and as it enters said divider means; and

means for operating said variable drive means to speed up or slow down the advancement of said dough batch infeed by said conveyor means and dough advancing means in response to the height of said preshaped configuration of dough batch sensed by said sensor means.

4,368,020

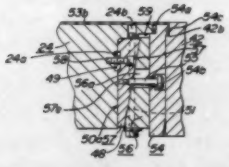
MOLD BOX WEDGING ASSEMBLY

Leonard Brown, Levittown, and Guenter R. Goebel, Grampian, both of Pa., assignors to Crossley Machine Company, Inc., Trenton, N.J.

Filed Mar. 3, 1981, Ser. No. 239,898

Int. Cl.³ B28B *17/00*

U.S. Cl. 425—195 **14 Claims**



1. A wedging assembly for demountably fixing a mold box or the like within an opening in a surrounding casing member, comprising:

(a) an outer wedge adapted to be fixed to one wall of said opening, said outer wedge having a vertically angled surface facing inwardly, and

(b) an inner wedge disposed with a vertically angled outward surface in contact with said angled surface of said outer wedge, said inner wedge being arranged for adjustment to a predetermined vertical position, said inner and outer wedges each having at least one substantially vertical passageway capable of at least partial alignment, and

(c) adjustable securing means passing through said vertical passageway in said inner wedge and engaging said vertical passageway of said outer wedge for limiting movement of said inner wedge downward beyond a predetermined point and for moving said inner wedge vertically.

4,368,021

OVAL DISH FORMING METHOD AND MACHINE

George Ryckman, deceased, late of East Liverpool, Ohio (by Margaret V. Ryckman, executrix), assignor to Service (Engineers) Limited, Stoke-on-Trent, England

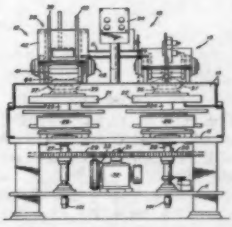
Continuation-in-part of Ser. No. 29,288, Apr. 4, 1979, Pat. No. 4,286,938. This application Mar. 2, 1981, Ser. No. 239,639

Claims priority, application United Kingdom, Apr. 10, 1980, 8011908

The portion of the term of this patent subsequent to Sep. 1, 1998, has been disclaimed.

Int. Cl.³ B28B *1/02, 1/29*

U.S. Cl. 425—265 **19 Claims**



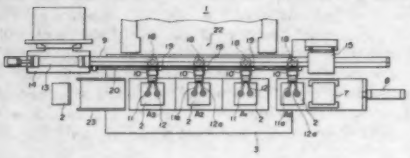
1. A machine for forming oval flatware in the manufacture of ceramic ware comprising first and second mould supports, mechanism for rotating each of the mould supports eccentrically beneath a roller shaping tool for the shaping of a piece of clay on an oval mould on the mould support, a first tool supporting head associated with the first mould support and carrying a rotatable roller tool in the form of a spreading tool, a second tool supporting head associated with the second mould support and carrying a rotatable roller tool in the form of a finishihg tool, and tool advancing means operable to bring the roller tools on their tool supporting heads into engagement with pieces of clay on moulds positioned on the eccentrically rotating mould supports, whereby in use of the machine a clay piece can initially undergo a spreading and initial shaping operation by the action of the spreading tool whilst the mould is eccentrically rotated by the first mould support, and then undergo a final shaping operation by the action of the finishing tool whilst the mould is eccentrically rotated by the second mould support.

4,368,022

FEEDING APPARATUS IN PRESSING MACHINE

Masaru Orii, Machida, Japan, assignor to Kabushiki Kaisha Orii Jidoki Seisakusho, Japan

Filed Aug. 12, 1981, Ser. No. 292,216
Claims priority, application Japan, May 26, 1981, 56-76215
Int. Cl.³ B30B 7/00
U.S. Cl. 425—343 1 Claim



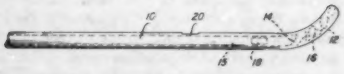
1. A feeding apparatus in pressing machine which performs sequential predetermined pressing operations on a workpiece at two or more working positions spaced by given intervals, which includes a holder means provided in such a manner that it can be reciprocated between adjacent working positions a suction means that is held by said holder means and which stops applying suction to the workpiece at one of said working positions, and a pivoting mechanism for pivoting said holder means at said working position and retracting said holder means to a position where it does not interfere with the pressing operation of said pressing machine, the workpiece under suction of the suction means at one working position being sent to the next working position by the movement of the holder means and retracted to said non-interfering position by pivoting said holder means after said suction means stops applying suction to the workpiece and before the pressing machine starts to operate.

4,368,023

APPARATUS FOR MAKING COUDE CATHETERS

Richard E. Hannah, Spring Grove, and Steffen Lyons, Grayslake, both of Ill., assignors to Baxter Travenol Laboratories Inc., Deerfield, Ill.

Division of Ser. No. 51,331, Jun. 27, 1979, Pat. No. 4,292,270. This application Feb. 4, 1981, Ser. No. 231,208
Int. Cl.³ B29C 1/02
U.S. Cl. 425—392 2 Claims



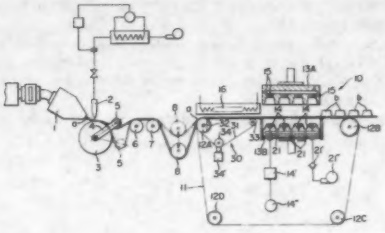
1. In a system for preparing elbowed-end catheters, a die which defines a closed-end, hollow tube made of thermally and electrically conductive material and adapted to snugly receive an end of said catheter, said closed end of said hollow tube die defining curved surface means for shaping and closing said catheter end, means for heating the hollow tubular die, said die also including an enlarged sleeve positioned remotely from the closed end of said die, and means for providing a coolant medium to said sleeve, said hollow tubular die defining an elbowed curve, whereby flexible thermoplastic tubing which has an end sealed within said die simultaneously acquires an elbowed end upon heating in the die at a temperature above the plastic melting temperature thereof.

4,368,024

FORMING MACHINES

Kazuo Asano, Nagoya, Japan, assignor to Kabushiki Kaisha Asano Kenkyusho, Nagoya, Japan

Filed Oct. 23, 1981, Ser. No. 314,157
Claims priority, application Japan, Oct. 31, 1980, 55/153986
Int. Cl.³ A23G 3/00
U.S. Cl. 425—397 4 Claims



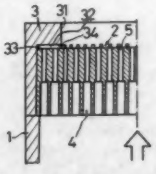
1. In a forming machine comprising a molding zone where upper and lower die boxes are arranged so as to be relatively movable between the separated position for receiving softened thermoplastic material sheet therebetween and the closed position for molding, a waiting zone where the plastic sheet of the length substantially corresponding to the longitudinal dimension of the die box is waiting when the die boxes are closed so as to be fed to the molding zone when the die boxes are separated, and a pair of endless chains each provided with a plurality clamps therealong so as to grasp said plastic sheet along the opposite edges thereof for intermittently feeding from said waiting zone to said molding zone and taking the plastic sheet on which articles are formed out of said molding zone for trimming, an improvement comprising a plurality of longitudinally extended supporter means so as to support the plastic sheet in the waiting zone, the number of which is less by one than the number of dies arranged transversely in the die box so that each of the longitudinal lines striated by said supporter means in the plastic sheet along the reverse side thereof may pass between the adjacent two dies in the molding zone.

4,368,025

EXTRUSION DEVICE FOR PRODUCING HONEYCOMB STRUCTURES

Junichiro Naito, Toyokawa; Shinichi Yamamoto, Takahama; Zituo Suzuki, Aichi, and Mitsuru Asano, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Continuation-in-part of Ser. No. 214,984, Dec. 10, 1980, and Ser. No. 222,068, Jan. 2, 1981. This application Jan. 21, 1981, Ser. No. 226,772
Claims priority, application Japan, Jan. 21, 1980, 55-5505
Int. Cl.³ B29F 3/04
U.S. Cl. 425—462 5 Claims



1. An extrusion device for producing honeycomb structures, comprising:

a die provided with a large number of disconnected feed

passageways which are formed on an extrudable material inlet side thereof in the axial direction thereof, and having

a large number of interconnected grid-shaped extrusion slots which are formed on an extrudable material outlet side of said die in said axial direction and communicated with said feed passageways; and

an annular die mask having a radially inner circular surface extending in said axial direction for defining the outermost peripheral surface of each said honeycomb structure,

said die mask further having a radially extending annular end wall which at its radially inner peripheral edge connects to and extends radially outwardly from said circular surface and covers a predetermined number of said extrusion slots around the peripheral portion of said die on said extrudable material outlet side thereof;

said die mask being provided with a plurality of disconnected openings which are formed at predetermined intervals in the said radially inner peripheral edge of said end wall and communicated with the said extrusion slots that are covered by said die mask for supplying at least part of the extrudable material which is extruded through said covered extrusion slots radially inwardly to aid in forming the outer periphery of the extruded honeycomb structure.

4,368,026

CENTERING DEVICE FOR SHAPING TOOLS OF EXTRUSION PRESSES

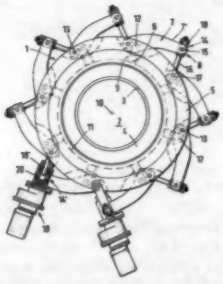
Eduard J. Budel, Al Zwolle, Netherlands; Heinrich Fehrmann, Haren, Fed. Rep. of Germany, and Johan de Kok, Ex Hardenberg, Netherlands, assignors to Wavin B.V., Zwolle, Netherlands

Filed Jan. 19, 1981, Ser. No. 226,498

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1980, 3001705

Int. Cl.³ B29D *23/04*; B29F *3/04*

U.S. Cl. 425—466 **10 Claims**



1. A centering device for shaping tools for extrusion presses, wherein an outer mandrel together with an inner mandrel defines a through gap for plastic extrusion material, comprising a plurality of centering members supported on the outer mandrel, and being distributed about the periphery thereof in a radial plane, means rendering said centering members adjustable in a radial direction, and members being constructed in the form of push rods guided for radial displacement, each push rod (**6**, **106**) having an individually adjustable drive and adjustable lever (**7**,**107**) pivotally supported on the outer mandrel and being actuable by means of a tightening device, (**8**,**108**) and forming a transmission gear for applying the tightening force, each adjustable lever being in direct engagement with its push rod in the region between its pivot bearing (**13**,**113**) and the point of action of its tightening device so that the pivotal axes of the adjustable levers (**7**,**107**) are aligned parallel to the longitudinal central axis (**10**,**110**) of the shaping tool.

4,368,027

DEVICE FOR MANUFACTURE OF HOLLOW ARTICLES

Michel Lorge, Brussels, and Roger Houba, Gembloux, both of Belgium, assignors to Solvay & Cie., Brussels, Belgium

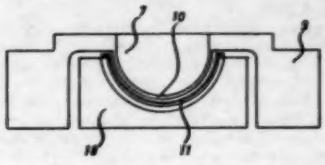
Division of Ser. No. 557,376, Mar. 11, 1975, Pat. No. 4,049,761.

This application Jun. 24, 1977, Ser. No. 809,944

Claims priority, application France, Mar. 11, 1975, 74 09380

Int. Cl.³ B29D *23/00*

U.S. Cl. 425—527 **4 Claims**



1. Device for carrying out a pre-blowing operation comprising: at least one pre-blowing mold formed of two half-molds which can be joined together along a closure plane to define a cavity having a protruding base of hemispherical shape; an elongated blade, having a semicircular cross section and a diameter corresponding to that of the base of the cavity, mounted at the base of one of said half-molds; and means operatively associated with said blade for causing said blade to travel periodically adjacent the base of the cavity of said mold and perpendicularly to, and past, the closure plane of said mold.

4,368,028

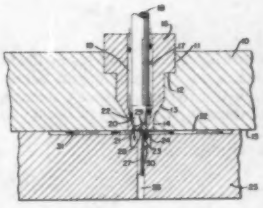
ANNULAR FLOW PLASTIC EXTRUSION NOZZLE OR GATE

Anthony J. Grish, and Thomas A. Grish, both of P.O. Box 248, St. John, Ind. 46373

Filed Feb. 2, 1981, Ser. No. 239,519

Int. Cl.³ B29F *1/03*

U.S. Cl. 425—569 **2 Claims**



1. An annular flow plastic extrusion nozzle and mold for molding rotary members of uniform density and rotary balance, comprising first and second mold elements joining on a parting line, a nozzle housing in said first element, a bore in said housing opening on said parting line, a torpedo in said bore and annularly spaced therefrom, a taper in said bore adjacent said parting line, a corresponding taper on said torpedo, a flat end surface for said torpedo on said parting line, an annular nozzle between said taper of said bore and said taper of said torpedo opening on said parting line, mold cavities in said second mold element receiving plastic from said annular nozzle, a centered bore in said second mold element adapted to receive an axle pin, a male portion on an end of said pin, a female portion in said flat end of said torpedo receiving said male portion and centering said axle when said mold elements are joined.

4,368,029

HETEROGENEOUS FLAMELESS HYDROCARBON COMBUSTION CONTACT CATALYST, METHOD OF MAKING SAME AND METHOD FOR COMBUSTION OF HYDROCARBONS

Alain Lacroix, Lyons, France, assignor to Societe Lyonnaise des Applications Catalytiques, Rillieux, France

Filed Jun. 3, 1981, Ser. No. 269,816
Claims priority, application France, Jun. 4, 1980, 80 12701
Int. Cl.³ F23D *13/00*; B01J *23/10, 23/34, 23/86*
U.S. Cl. 431—7 7 Claims

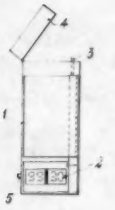
1. A catalyst mass for the flameless combustion of hydrocarbons comprising a compact texture catalyst support and a catalyser on said support consisting of at least one component capable of heterogeneous catalysis of hydrocarbon combustion and an effective amount of the manganese oxide Mn_3O_4, said catalyser being constituted by platinum, chromium oxide Cr_2O_3, cobalt oxide Co_2O_3 and the manganese oxide Mn_3O_4, the platinum being present in a weight ratio to the support of 0.0024 to 0.0075 and each of the oxides being present in a weight ratio to the support of the order of 0.03, the support being constituted by silico-aluminous fibers.

4,368,030

CIGARETTE LIGHTER PROVIDED WITH A DEVICE FOR SIGNALLING THE NUMBER OF LIGHTINGS EFFECTED AND THE TIME INTERVAL BETWEEN TWO SUBSEQUENT LIGHTINGS

Laura Benedetti, Lungadige Catena 3, Verona, Italy

Filed Feb. 17, 1981, Ser. No. 234,718
Claims priority, application Italy, Feb. 18, 1980, 19978 A/80
Int. Cl.³ F23D *5/12*
U.S. Cl. 431—13 2 Claims



1. A cigarette lighter characterized by the fact of providing a pulse counter actioned by shutting the lighter cap and linked to a display, and providing as well a timer, also linked to a display, and means for automatically setting said timer to zero when the figure shown by said counter moves one unit forward at the shutting of the cap.

4,368,031

STATIONARY FLAME SCANNER FOR TILTING BURNER

Roman Chadshay, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

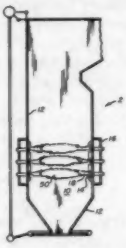
Filed Jul. 14, 1980, Ser. No. 167,976
Int. Cl.³ F23N *5/08*
U.S. Cl. 431—79 5 Claims

1. In a vapor generator having a furnace of generally rectangular cross section enclosed by walls formed of vapor generating tubes, a plurality of burners mounted in the furnace walls and operative to discharge a stream of fuel into the furnace, means operative to ignite the various streams of fuel discharging into the furnace thereby forming a plurality of individual flames with one flame emanating from each burner, and means operatively associated with the burners for altering the angle of discharge with respect to the horizontal of the stream of fuel discharging from the burners; a flame monitoring system having a plurality of flame scanner assemblies commensurate in number with the plurality of burners with one flame scanner assembly associated with each burner for monitoring the individual flames emanating from the burners; each flame scanner assembly comprising:

a. a scanner sensor module located outside of the furnace where it is not exposed to direct radiation from the flame emanating from the burner with which the flame scanner assembly is associated;

b. a scanner head stationarily mounted in a port in the furnace wall adjacent said associated burner;

c. a plurality of at least three light transmission tubes stationarily mounted within said scanner head so as to sight transversely across the flame emanating from said associated burner, at least one of said light transmission tubes



stationarily mounted within said scanner head to sight upwardly at an acute angle into the furnace, at least one of said light transmission tubes stationarily mounted within said scanner head to sight horizontally into the furnace, and at least one of said light transmission tubes stationarily mounted within said scanner head to sight downwardly at an acute angle into the furnace, said light transmission tubes extending from said scanner head to said scanner sensor module thereby providing a path through which light radiation generated by the flame passes to said scanner sensor module; and

d. a cooling sleeve enclosing said light transmission tubes, said cooling sleeve providing a conduit through which cooling air may be passed over said light transmission tubes and through said scanner head into the furnace.

4,368,032

LIQUID FUEL COMBUSTION APPARATUS

Hiroyuki Araya, Fuji; Toshihiko Saito, Yokohama; Katsuyoshi Kumazawa, Yokohama; Moriyoshi Sakamoto, Yokohama, and Mitoshi Koyama, Fuji, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 1, 1980, Ser. No. 165,036
Claims priority, application Japan, Jul. 6, 1979, 54-85561
Int. Cl.³ F23D *5/04*
U.S. Cl. 431—118 4 Claims

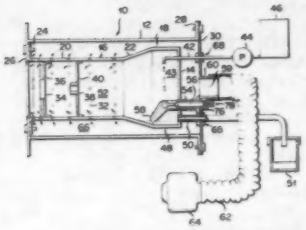
1. A liquid fuel combustion apparatus comprising:

a combustion cylinder having a first cylindrical wall portion, a second cylindrical wall portion which has a diameter smaller than that of said first cylindrical wall portion and arranged coaxially with said first cylindrical wall portion, a connecting wall portion which is arranged coaxially with said first and second cylindrical wall portions and is connected to said first and second cylindrical wall portion, and an end wall which has a flat plate like shape, intersects with the longitudinal axis of said first cylindrical wall portion at a substantially right angle and blocks one end of said first cylindrical wall portion opposite said connecting wall portion;

a fuel reservoir defined by the lower portions of said end wall, said first cylindrical wall portion and said connecting wall portion;

a housing disposed outside of said combustion cylinder, said housing being arranged coaxially with said combustion cylinder in a spaced-apart relation to said combustion cylinder to create a space therebetween, said housing including an end wall which is fixed to said housing, said end wall of said housing having a flat plate like shape, and being arranged parallel with said end wall of said combustion cylinder, so as to face each other;

air supply means disposed outside of said housing and having a flexible duct which is connected to said end wall of said housing so as to supply air into said space located between said housing and said combustion cylinder;



air passage means in said second cylindrical wall portion to supply air from said space between said housing and said combustion cylinder to said combustion cylinder;

a liquid fuel supply pipe supported by said end walls of said housing and combustion cylinder so as to supply liquid fuel to said fuel reservoir;

an overflow pipe supported by said end walls of said housing and combustion cylinder so as to discharge, toward the outside of said housing, a fuel portion exceeding a predetermined amount of liquid fuel which is supplied into said fuel reservoir;

ignition means supported by said end walls of said housing and combustion cylinder so as to ignite the liquid fuel stored in said fuel reservoir.

4,368,033

APPARATUS AND METHOD FOR ADJUSTING PALLET-MOUNTED SAGGERS

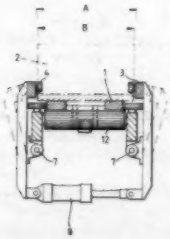
Walter Muller, Krumbach, Fed. Rep. of Germany, assignor to Lingl Corporation, Paris, Tenn.

Filed May 26, 1981, Ser. No. 267,339

Claims priority, application Fed. Rep. of Germany, May 27, 1980, 3020120

Int. Cl.³ F21C 9/00; F27D 5/00; B65G 47/26

U.S. Cl. 432—6 **12 Claims**



12. Method for adjusting the relative positions of plural saggers disposed in-line on a common pallet, said method comprising:

positioning plural members spaced apart from one another at predetermined intervals into simultaneous positive engagement paths with respectively corresponding ones of said saggers, said members being relatively fixed with respect to each other; and

producing relative movement between said common pallet and said members while they are continuously positioned into said positive engagement paths whereby said members are caused to engage their respectively associated saggers and substantially simultaneously adjust them on said pallet into a desired spaced relationship.

4,368,034

HEATING CONTROL METHOD FOR CONTINUOUSLY HEATING FURNACE

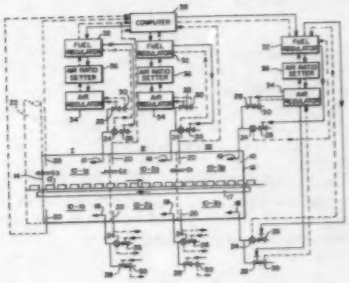
Yoshinori Wakamiya, Nishinomiya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1981, Ser. No. 269,666

Claims priority, application Japan, Jun. 4, 1980, 55-75902

Int. Cl.³ F27D 3/00; F27B 9/40; C21B 7/24

U.S. Cl. 432—11 **1 Claim**



1. For use with a continuously heated furnace divided into a plurality of control zones, wherein each of said plurality of zones has: a fuel flow rate sensor for sensing the flow rate of a charged fuel, an air flow rate sensor for sensing the flow rate of charged air, and a temperature sensor for sensing the temperature of an exhaust gas at a predetermined point in time, a control method for heating a plurality of slabs and comprising the steps of:

sensing the charged fuel flow rate and the charged air flow rate and the exhaust gas temperature at a predetermined point in time for each of said control zones;

calculating the heat input to each slab from the equations:

$$V(i) = \frac{(C_{pg} \cdot T_g(i) - C_{pg} \cdot T_g(i+1) \cdot \sum_{k=1}^{i+1} [V(k)\{G_o + A_o(u(k)-1)\}] + A_o + C_{pg} \cdot T_g(i)\}G_o + A_o \cdot Q_{TX(i)} + Q_L(i) + Q_w(i)}{(u(i)-1)}$$

and

$$Q_{TX(i)} = V(i) \cdot [H_g + C_{pg} \cdot T_f + u(i) \cdot A_o + C_{pg} \cdot T_g(1) \{G_o + A_o(u(i)-1)\}] - (C_{pg} \cdot T_g(i) - C_{pg} \cdot T_g(i+1)) \cdot \sum_{k=1}^{i+1} [V(k)\{G_o + A_o(u(k)-1)\}] - Q_L(i) - Q_w(i)$$

wherein:

V(i)—Calc. flow rate of charged fuel in zone i

V(k)—given flow rate of charged fuel in zone k

Hg—calorific value per unit flow rate of the fuel

Cpf—specific heat of the fuel per unit flow rate
Cpg—specific heat of exhaust gas per unit flow rate
Tf—temperature of fuel
Tg(i)—temperature of exhaust gas at zone i
u(i)—excess air coefficient at zone i
Ao—theoretical amount of air per unit flow rate of fuel
Go—theoretical amount of exhaust gas per unit flow rate of fuel
QL(i)—heat dissipation from furnace body in zone i
Qw(i)—heat dissipation from cooling water in zone i
$Q_{TS(i)}$—heat input to slab at zone i;

calculating the heat content to each slab from the equations:

$$\eta Hj - C_o - C_1 Hsj + C_2 Hsj^2 + C_3 Hsj^3 + C_4 Hsj^4$$

$$Qsj = \eta j Q_{TS(i)} = \frac{\eta Hj \cdot Asj}{\sum_{k=1}^{n} \eta Hk \cdot Ask} \cdot Q_{TS(i)}$$

$$Hsj = Hsj^p + Qsj/Voj$$

wherein:
ηHj—rate of apportionment
C_o, C_1, C_2, C_3, C_4—constants
n—number of slabs in zone i
Qsj—heat input to slab j
Hsj—heat content of slab j at present time
Hsj^p—previous heat content of slab j
Voj—volume of slab j
γj—specific weight of slab j;

estimating a heat input to said slabs required up to the next succeeding time point from the difference between said determined heat input and an objective heat input to said slab using the equations:

$$Qt = Vo \cdot \gamma \cdot (Hs\Delta t - Hs)$$

$$Q_{TS(i)} = \sum_{j=1}^{n} Qs(j)$$

wherein Δt is the time internal between the present time and said next succeeding time;

estimating a flow rate of said charged fuel by substituting values in the aforesaid equations;

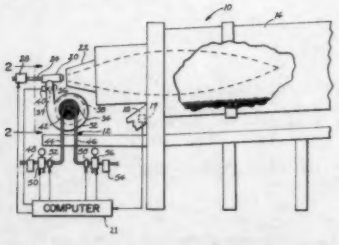
controlling said flow rate of said charged fuel so as to be equal to said estimated flow rate for each of said zones.

4,368,035

METHOD AND APPARATUS FOR HEATING AGGREGATE

Gerald A. McCartney, 10016 NE. 156th Ave., Vancouver, Wash. 98662, and Calvin E. Curtis, 425-½ N.E. 2nd #3, Camas, Wash. 98607

Filed May 1, 1981, Ser. No. 259,413
Int. Cl.³ F27B *14/00, 15/00*; F23J *7/00*
U.S. Cl. 432—13 **8 Claims**



1. Water-feed apparatus in a system used for heating aggregate and the like, where the system includes a combustion chamber for mixing a stream of fuel and a stream of forced air to form a gaseous combustible fuel mixture, and a blower for supplying the chamber with forced air, said apparatus comprising

an atomizing nozzle positioned to inject an atomized water spray producible by the nozzle into the air-flow stream created by the blower,

water-supply means connected to said nozzle for suppyling it with a stream of water, and

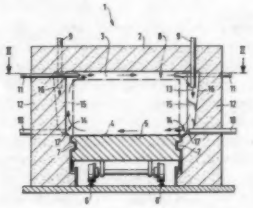
gas-supply means connected to said nozzle for supplying it with a stream of pressurized gas for mixing with said water stream in said nozzle to create such spray.

4,368,036

KILN FOR FIRING CERAMIC WORKPIECES

Hermann Krembeller, Nuremberg, Fed. Rep. of Germany, assignor to Ludwig Riedhammer GmbH & Co. KG, Nuremberg, Fed. Rep. of Germany

Filed Jul. 7, 1981, Ser. No. 281,192
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1980, 3025801
Int. Cl.³ F27B *9/00, 5/04*
U.S. Cl. 432—146 **14 Claims**



1. In a kiln for firing ceramic workpieces, which kiln is composed of two opposed side walls and a top wall enclosing an elongate kiln chamber, and means for introducing jets of heating or cooling gases into the kiln chamber at locations spaced along the length of the kiln, the improvement wherein: said means comprise at least one element selected from the group consisting of nozzles and high speed burners and are located for directing the jets produced thereby vertically downwardly in the region of said side walls of said kiln; and said kiln further comprises deflector stones disposed at a distance from said means for deflecting the jets and gases within said chamber transversely of the length of said kiln, and additional means for producing horizontally oriented jets disposed in the region of said deflector stones.

4,368,037

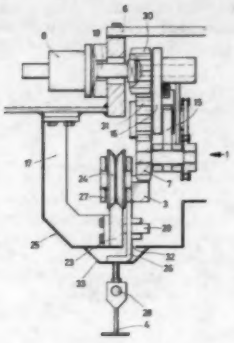
CONVEYOR ARRANGEMENT FOR A CONTINUOUS OVEN

Ferdinand Limque, Berg en dal, Netherlands, and Hans Bertrand, Goch, Fed. Rep. of Germany, assignors to Ipsen Industries International GmbH, Kleve, Fed. Rep. of Germany

Filed May 6, 1981, Ser. No. 260,271
Claims priority, application Fed. Rep. of Germany, May 10, 1980, 3017941
Int. Cl.³ F27D *3/00*
U.S. Cl. 432—239 **14 Claims**

1. Apparatus for conveying a load-carrying frame through an oven casing, said apparatus comprising rail means disposed within the oven casing, said frame comprising rollers adapted to run on said rail means with the frame suspended thereby, means for driving said frame through the oven casing while suspended from said rail means, said driving means comprising a first gear member secured to said frame, a second gear member rotatably supported on the oven casing and adapted to

mesh with said first gear member to advance said frame through the oven casing, and motor means disposed externally



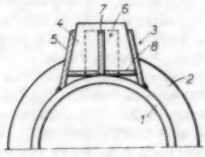
of the oven casing and connected to rotate said second gear member.

4,368,038

REFRACTORY PADS FOR WALKING BEAM FURNACES

Jean-Marc Bourdon, Neuilly-sur-Seine; Jean-Claude Hugues, Le Thor, and Marc Esnoult, Sorgues, all of France, assignors to Societe Europeenne des Produits Refractaires, Neuilly-sur-Seine, France

Filed Apr. 24, 1981, Ser. No. 257,261
Claims priority, application France, May 6, 1980, 80 10072
Int. Cl.³ F27D 5/00, 3/02
U.S. Cl. 432—253 **8 Claims**



1. A skid pad or lug for walking beam furnaces, comprising a body made of a refractory oxide-based substance and a shell made of a refractory metal alloy surrounding the periphery of the body, and means to prevent detachment of the body and shell from one another.

4,368,039

DISCONNECT FOR NECKSTRAP OR HEADCAP REACTION MEMBER

Maclay M. Armstrong, Seattle, Wash., assignor to Northwest Orthodontics, Inc., Seattle, Wash.

Continuation-in-part of Ser. No. 655,401, Feb. 5, 1976, Pat. No. 4,155,161, which is a continuation-in-part of Ser. No. 613,243, Sep. 15, 1975, abandoned. This application Apr. 25, 1979, Ser. No. 33,111
The portion of the term of this patent subsequent to Sep. 26, 1995, has been disclaimed.
Int. Cl.³ A61C 7/00
U.S. Cl. 433—5 **21 Claims**

1. In an orthodontic appliance including force-reaction means engageable with the wearer's head and/or neck, an orthodontic treatment force-applying device for applying force to a jaw, and resilient force-producing means connected to the force-reaction means and to the force-applying device, the improvement comprising the force-reaction means including a safety connection automatically operable by relative movement of the force-applying device and the force-reaction means which increases the distance between the force-reaction means and the force-applying device beyond a predetermined limit, said connection being operated by such movement to

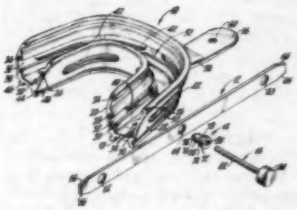
relieve the force-applying device from force exerted by the force-producing means capable of moving the force-applying device an appreciable distance toward the wearer's face after the force-reaction means and the force-applying device have been moved beyond such predetermined limit.

4,368,040

DENTAL IMPRESSION TRAY FOR FORMING A DENTAL PROSTHESIS IN SITU

Bernard Weissman, New York, N.Y., assignor to Ipco Corporation, White Plains, N.Y.

Filed Jun. 1, 1981, Ser. No. 269,341
Int. Cl.³ A61C 9/00
U.S. Cl. 433—36 **21 Claims**



1. A dental impression tray for forming therein a negative impression of a dental area, said tray comprising:

a trough for receiving dental impression material therein;

means on said tray for application of dental restorative material into a mold cavity defined between the negative impression, formed in said trough of said tray, and the dental area after preparation thereof for restoration, so as to form a dental prosthesis, said application means including openings provided in said tray;

valve means insertable in said openings for positioning adjacent to the dental area;

control means for closing said valve means during formation of the negative impression and for opening said valve means for application of the dental restorative material therethrough;

said tray including a base wall and upstanding side walls extending outwardly from one side of said base wall to define said trough, a retaining channel provided along at least one of said side walls, at least one elongated slot provided in said one side wall within said channel; and

a strap member adjustably slidable in said channel to abut said one side wall, and at least one transverse opening provided through said strap member for alignment with said slot, said transverse opening receiving said valve means and positioning it within said slot.

16. A method for forming a dental prosthesis in situ, comprising:

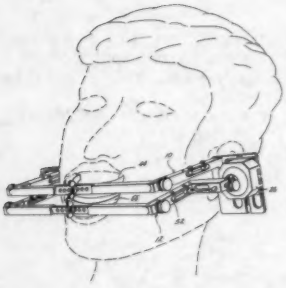
(a) forming a negative impression in a dental impression tray of a dental area to be restored, and removing the dental impression tray thereafter;
(b) performing tooth preparatory work in the dental area to be restored, including removal of portions thereof;
(c) repositioning the dental impression tray having the negative impression therein onto the dental area so as to form a mold cavity between the negative impression in the tray and the prepared dental area;
(d) injecting dental restorative material into the mold cavity thus formed so as to form the dental prosthesis, and
(e) removing the dental impression tray leaving the dental prosthesis in the mouth.

4,368,041

DENTAL SIMULATOR AND METHOD FOR RECORDING JAW MOVEMENTS

Walter G. Roup, 2425 Underwood, #360, Houston, Tex. 77030

Filed Aug. 7, 1980, Ser. No. 176,198
Int. Cl.³ A61C *19/04*
U.S. Cl. 433—69 **16 Claims**



1. A dental apparatus for recording and duplicating mandible movements, the maxilla and mandible being articulated at the temporomandibular joint with the maxilla and mandible forming the occlusal plane in the closed position, comprising:
a first frame having two horizontal receptacles mounted to be positioned adjacent the side of the patient's head, said receptacles being adapted to hold a molding material;
a second frame having two horizontal styli disposed thereon, said styli having a portion thereof projecting into said receptacles for indenting the molding material during three-dimensional mandible movements;
means removably mounted on said first and second frames for attaching casts of the patient's maxilla and mandible whereby the casts on said frames may be moved to duplicate the patient's three-dimensional mandible movements; and
means for attaching said receptacles and styli to the patient's maxilla and mandible whereby said receptacles and styli are positioned above the occlusal plane and anterior of the temporomandibular joint.

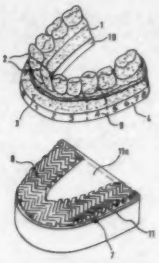
4,368,042

DEVICE FOR USE IN MAKING A DENTAL REPLICA, AND A METHOD OF MAKING A DENTAL REPLICA

John T. Felstead, 86 Collins Meadow, Harlow, Essex, and John C. Gerrard, 5, The Oval, Broxbourne, Hertfordshire, both of England

Filed Jul. 13, 1981, Ser. No. 283,038
Claims priority, application United Kingdom, Jul. 11, 1980, 8022692; Nov. 7, 1980, 8035822
Int. Cl.³ A61C *11/00*
U.S. Cl. 433—213 **5 Claims**

1. A device for use in making a dental replica, comprising a plate which is generally jaw-shaped and which has on at least one surface thereof a pattern which comprises a series of parallel zigzag ribs and grooves, said plate having means on one surface for receiving a molded dental replica and being adapted to be separated into individual tooth pieces, and a base



having on the upper surface thereof a complementary pattern which comprises a series of parallel zigzag ribs and grooves capable of interlocking with said pattern on the plate to secure said plate or said individual tooth pieces on said base in predetermined locations.

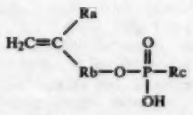
4,368,043

ADHESIVE CEMENTING AGENTS FOR THE HARD TISSUES OF THE HUMAN BODY

Junichi Yamauchi, Kurashiki; Eiichi Masuhara, Bunkyo; Nobuo Nakabayashi, Matsudo; Kyoichiro Shibatani, Kurashiki, and Tooru Wada, Takatsuki, all of Japan, assignors to Kuraray Company, Limited, Okayama, Japan

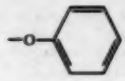
Division of Ser. No. 936,759, Aug. 25, 1978, Pat. No. 4,259,117, which is a continuation of Ser. No. 778,734, Mar. 17, 1977, abandoned. This application May 14, 1980, Ser. No. 149,770
Claims priority, application Japan, Mar. 17, 1976, 51-30045; Nov. 29, 1976, 51-143807; Nov. 30, 1976, 51-145049
The portion of the term of this patent subsequent to Mar. 31, 1998, has been disclaimed.
Int. Cl.³ A61K *6/02*; C09K *3/00*
U.S. Cl. 433—217 **8 Claims**

1. A dental adhesive agent for bonding a dental filling material to the tooth, which comprises: (1) a radical polymerizable monomer selected from the group consisting of an acrylic acid ester, a methacrylic acid ester, styrene and vinylacetate, (2) a curing agent and (3) a compound of formula A in an amount of not less than 2 weight percent based on the radical polymerizable monomer, said formula being:



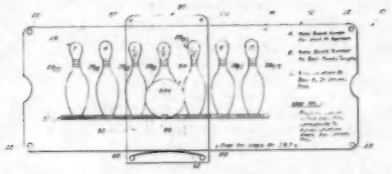
wherein Ra is hydrogen or methyl; Rb is COOY, OCOY, OY, Y, $CO(OCH_2CH_2)_m$,

wherein m is an integer of 1 to 5 or $CO(OCH_2CH_2)_l$



wherein l is an integer of 1 to 3; Y is a hydrocarbon residue containing 1 to 30 carbon atoms, which residue may be substituted by hydroxyl, alkoxy or halogen; Rc is X or OX wherein X is an aromatic or alicyclic hydrocarbon residue containing 1 to 30 carbon atoms, which may be substituted by hydroxyl, halogen, amino or carboxyl.

4,368,044
BOWLER'S APPROACH STARTING LOCATION CALCULATING DEVICE
James F. Martin, 3684 Mill St., Marion, N.Y. 14505
Filed Jan. 18, 1982, Ser. No. 340,054
Int. Cl.³ A63B *69/00*
U.S. Cl. 434—249 **7 Claims**

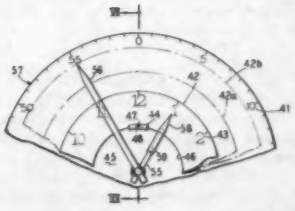


1. A bowling game calculating device for determining the optimum approach starting location of a bowler in a bowling game expressed as a distance from a given location on a standard bowling lane, said device comprising:
- a first member, said first member having a first hairline thereon;
- a first index on said first member, said first index having indicia corresponding to bowling pin locations expressed in terms of distance from a given location on a standard bowling lane;
- a second index on said first member, said second index having indicia corresponding to target marker locations expressed in terms of distance from said given location on a standard bowling lane;
- a second member associated with said first member for slidable movement relative thereto;
- a scale on said second member, said scale having indicia corresponding to approach starting locations expressed in terms of distance from a given location on a standard bowling lane, said scale associated with said first hairline and said second index; and
- a cursor associated with said first and second members for slidable movement relative thereto, said cursor having an indicator and a second hairline thereon, said indicator associated with said first index and said second hairline associated with said scale; whereby when said indicator is aligned with a particular bowling pin location on said first index, and when said second member is moved relative to said first member such that a particular portion of said scale, associated with a particular target marker location of said second index, is aligned with said second hairline, then an optimum approach starting location is found on said scale aligned with said first hairline.

4,368,045
TIME MACHINE/TIME PUZZLE
Susan N. Y. Kuh, 2114 Manoa Rd., Honolulu, Hi. 96822
Filed Sep. 10, 1980, Ser. No. 185,961
Int. Cl.³ G09B *19/12*
U.S. Cl. 434—304 **1 Claim**

1. An educational device to facilitate teaching and learning how to tell time comprising:
- a puzzle including a base and puzzle pieces which fit onto said base,
- said base having a representation of a clock face thereon, including the numbers from 1 to 12 signifying the hours,
- a recessed circular area on the inside of the numbers on the clock representation,
- a plurality of sets of puzzle pieces signifying different lengths of time, a first set comprising a circular piece representing one hour, a second set comprising two semi-circular pieces each representing half an hour, a third set comprising four one-quarter circle pieces each representing a fourth of an hour, a fourth set comprising six one-sixth circle pieces each representing ten minutes, a fifth set comprising twelve one-twelfth circle pieces each representing five minutes and a sixth set comprising a plurality of one-sixtieth segment pieces each representing one minute, at least one piece of each set bearing indicia indicative of the time that it represents,
- each set closely conforming to the circular outline of the recessed area of the base when fitted thereinto,
- said sets, when laid on top of each other, being identical in circular form,
- two pieces shaped to represent the hour and minute hands, respectively, of a real clock, and
- a peg adapted to secure the hour and minute hands to the base.

4,368,046
SYSTEM FOR TEACHING TIME RECOGNITION
Herman C. Bernick, 795 Vernon Ave., Glencoe, Ill. 60022
Filed Jul. 22, 1981, Ser. No. 285,841
Int. Cl.³ G09B *19/12*
U.S. Cl. 434—304 **2 Claims**



1. Apparatus for teaching time recognition comprising:
(A) a clock drive movement including an hour shaft and coaxial minute shaft driven thereby,
(B) a plurality of clock face means, each one of such clock face means being associatable with said clock drive movement, having an outer circumferentially extending scale

marked in 60 equal increments and having an inner circumferentially extending scale marked in 12 equal increments, said inner scale being radially spaced from said outer scale and having each increment thereof radially alignable with a different one of every five increments of said outer scale, each one of such clock face means of said plurality having a different such radial spacing between such outer scale and such inner scale,

(C) a minute hand associated with said minute shaft and having a length adapted to indicate specific locations along such outer scale, and

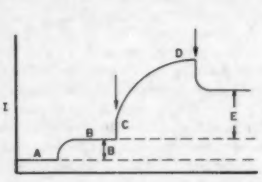
(D) hour hand means associatable with said hour shaft and having the capacity to be extended and retracted in length for adopting said hour hand means to indicate respective specific locations along a different prechosen one of said inner scales in said clock face plurality.

4,368,047

PROCESS FOR CONDUCTING FLUORESCENCE IMMUNOASSAYS WITHOUT ADDED LABELS AND EMPLOYING ATTENUATED INTERNAL REFLECTION

Joseph D. Andrade, and Richard Van Wagenen, both of Salt Lake City, Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Filed Apr. 27, 1981, Ser. No. 257,838
Int. Cl.³ G01N *33/54, 31/06, 21/64*
U.S. Cl. 435—4 **20 Claims**



1. A process for conducting fluorescence immunoassays without labels using internal reflection and wavelengths in the ultraviolet region which comprises directing a beam of light having wavelengths in the ultraviolet region to a solid-liquid interface which (i) has a material X immobilized thereon, and (ii) is in contact with an assay solution containing an unknown Y which contains at least one tyrosine, tryptophan, nucleic acid or other fluorescent group which is activated by wavelengths in the ultraviolet region, X and Y being in the relationship of antibody and antigen in that one has the ability to recognize the particular spatial and polar configuration of the other and is attracted to and bound to such configuration, said beam of ultraviolet light being projected under such conditions that there is internal reflection at the said interface, and then measuring the amount of fluorescence emitted from the surface of the interface, the amount of the fluorescence emission being a function of the amount of the unknown Y being detected.

4,368,048

SHIP S DRIVE SYSTEM

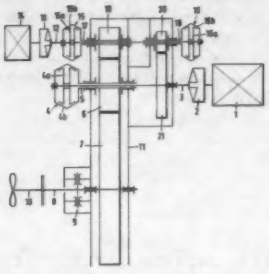
Herbert Wedler, Witten, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Jul. 3, 1980, Ser. No. 165,727
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1979, 2927386
Int. Cl.³ F16H *37/06*
U.S. Cl. 440—75 **10 Claims**

4. A ship's drive system for driving a propeller by means of an engine and which includes gear transmission means for coupling the engine to the propeller, the transmission means constituting a driving train which includes a main clutch whose input side is drivingly connected to the engine and whose output side is drivingly connected to the propeller, a device for deriving power from the driving train, comprising:

an auxiliary device with input shaft means;

first means drivingly connected to the driving train on the input side of the main clutch and including first clutch means for selective connection to said input shaft means; and



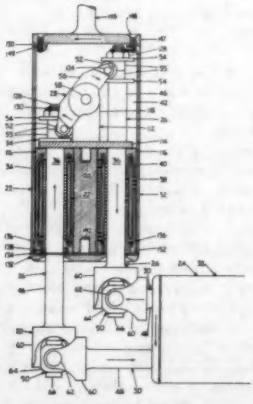
second means drivingly connected to the driving train on the output side of the main clutch and including second clutch means for selected connection to said input shaft, the driving connection by the main clutch between the engine and the propeller being independent from connect-disconnect states of the first and second clutch means, the first and second clutch means operating mutually exclusively.

4,368,049

COUPLER ASSEMBLY JOINING A DRIVING SHAFT TO A DRIVEN SHAFT FOR CONSTANT VELOCITY TRANSMISSION

Alfred W. Klomp, Tacoma, Wash., assignor to Exacto Inc., Tacoma, Wash.

Filed Feb. 13, 1980, Ser. No. 120,974
Int. Cl.³ F16D *3/28*
U.S. Cl. 464—50 **4 Claims**



1. A coupler assembly to join a driving shaft to a driven shaft for constant velocity transmission of rotary power and/or motion during their relative positioning varying from zero degree in line to ninety degrees angularity as selected throughout a hemisphere of possible radial shaft directions, comprising:

a. a plurality of paired yokes radially and circumferentially spaced about respective longitudinal centers of cylindrical bodies in turn adapted to be joined to a driven shaft and a

driven shaft, each yoke having a rod portion partially confined for rotatable, slideable, and/or reciprocal movement through a cylinder formed in a cylindrical body, paired rod portions, and each yoke having a cantilevered extending connectable end, having in turn a pair of opposing confronting arms, each arm having in turn a pin positioned ball for linking interconnection with a like pin positioned ball of a paired yoke;

b. multi-sectioned hubs secured about the respective groupings of like pin positioned balls to respectively interconnect each of the respective pairs of yokes;

c. two cylindrical bodies adapted to be joined to a driving shaft and a driven shaft, each having cylinders radially and circumferentially spaced about the center line to rotatably, slideably, and reciprocally partially receive the rod portions of the yokes and each having a larger interior cylinder to variably surround the projecting ends of the rod portions during movements of the yokes relative to the individual cylindricals;

d. said rod ends having upper and lower rocker restraining means; and,

e. rocker assemblies in said larger interior cylinder, said rocker assemblies frictionally mounted between said upper and said lower rocker restraining means.

4,368,050

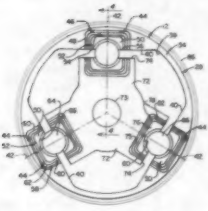
COUPLING

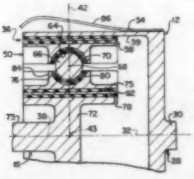
Robert R. Peterson, Hudson, Mass., assignor to Barry Wright Corporation, Newton Lower Falls, Mass.

Filed Sep. 8, 1980, Ser. No. 185,028

Int. Cl.³ F16D 3/52

U.S. Cl. 464—83 **23 Claims**





1. A coupling device comprising

a driving member mounted for rotation about a first rotation axis;

a driven member mounted for rotation about a second rotation axis;

first means rotatable with said driving member and including a first plurality of grooves;

second means rotatable with said driven member and including a second like plurality of grooves, each groove of said second plurality respectively opposing a respective one of said first plurality;

a like plurality of balls, each disposed in a respective groove of said first plurality and the respective opposing groove of said second plurality so as to operatively couple said driving member to said driven member;

first laminated bearing means including alternating layers of resilient and nonextensible materials disposed between said driving member and said first means;

second laminated bearing means including alternating layers of resilient and nonextensible materials disposed between said driven member and said second means;

said first and second laminated bearing means being capable of carrying in compression torque transmitted from said driving member to said driven member, said first laminated bearing means carrying in shear, relative shearing motion between said driving member and said first means, and said second laminated bearing means carrying in shear relative shearing motion between said driven member and said second means.

4,368,051

METHOD OF AND APPARATUS FOR MAKING HANDLE BAGS BEARING INDICIA

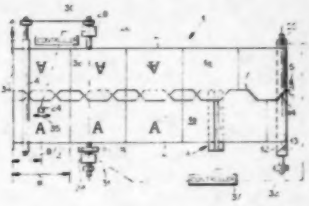
Hans Lehmacher, Im Hummerich, 5216 Niederkassel-Mondorf, Fed. Rep. of Germany

Filed Feb. 5, 1981, Ser. No. 231,879

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1980, 3004244

Int. Cl.³ B31B 23/02

U.S. Cl. 493—11 **8 Claims**



1. A method of making handle bags from an elongated synthetic-resin tube having two longitudinal rows of indicia spaced apart in each row by a bag width and with the indicia of one of said rows staggered equidistant between the indicia of the other row, said method employing an apparatus having:

a cutting drum formed with an endless circumferentially extending and undulating cutting groove, centered on and rotatable about a drum axis, and having a circumference different from said bag width;

a blade engaging radially inwardly in said groove; and

a closable transverse welder; said method comprising the steps of:

advancing said tube in separate transport steps at a feed speed over said drum at said blade and then through said welder;

rotating said drum in separate rotary steps at a peripheral speed different from said feed speed and with the rotary steps starting generally simultaneously with said transport steps, said feed and peripheral speeds being such that said tube is subdivided transversely by said blade into a pair of tube halves having at said drum staggered and interfitting handle flaps spaced longitudinally apart by said bag width;

stopping said rotary steps each time after one full revolution of said drum about said drum axis;

deflecting one of said halves between said drum and said welder through a detour equal to an odd-whole-number multiple of half of said bag width so said flaps of said halves are in exact transverse alignment downstream of said detour;

ending each transport step when the center of the indicia immediately upstream of said welder is spaced from said welder by a distance equal to half of said bag width and generally simultaneously closing said welder on said tube to form bag-edge seams thereon; and

opening the closed welder after formation of said seams and generally simultaneously starting the next feed step and the next rotary step.

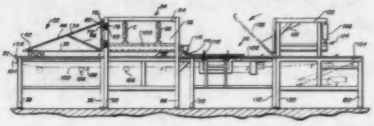
4,368,052

METHOD AND APPARATUS FOR LINING BULK BOX BLANKS

Thomas C. Bitsky, Oak Lawn, and Joseph R. Wilkus, Tinley Park, both of Ill., assignors to Peerless Metal Industries, Inc., Bridgeview, Ill.

Filed Aug. 18, 1980, Ser. No. 178,751
Int. Cl.³ B31B *7/00*
U.S. Cl. 493—96 **30 Claims**

1. An apparatus for lining bulk box blanks comprising:
a glue application station including a surface for supporting said blanks;
means for forwarding said blanks through said apparatus;
a plurality of side by side glue applicators;
means for automatically applying a plurality of discrete glue strips across said blank and control means for preventing application of glue to the blank fold seams;



means for moving said glue applicators across said blank transverse to the direction of forwarding said blank; and
means for securing a liner to said blank and for folding said blank to form an open ended tube.

4,368,053

FABRIC CONDITIONING COMPOSITIONS CONTAINING PHTHALOCYANINE SUBSTITUTED WITH QUATERNARY AMMONIUM GROUP-CONTAINING SULPHONAMIDE PHOTOACTIVATOR

Claude Eckhardt, Riedisheim, and Gerd Hölzle, Liestal, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 20, 1981, Ser. No. 236,423
Claims priority, application Switzerland, Feb. 29, 1980, 1624/80
Int. Cl.³ D06L *3/00*
U.S. Cl. 8—102 25 Claims

1. A fabric conditioning composition containing an aluminium or zinc phthalocyanine as bleach photoactivator which is substituted by a cationic water-solubilising group, and one or more cationic fabric conditioners.

4,368,054

COMPOSITIONS OF NITRO-ANILINES FOR PRODUCING AZO DYES ON FIBERS

Hasso Hertel, Mühlheim, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 29, 1982, Ser. No. 343,971
Claims priority, application Fed. Rep. of Germany, Feb. 4, 1981, 3103712
Int. Cl.³ D06P *1/12*
U.S. Cl. 8—527 8 Claims

1. Liquid compositions of nitro-aniline compounds which contain

(a) from 20 to 70 weight % of a nitro-aniline compound containing no sulfonic acid and/or carboxylic acid group and having a melting point of below 140° C.;

(b) from 5 to 80 weight % of an oxethylated castor oil of from 25 to 60 mols of ethylene oxide; and

(c) from 5 to 65 weight % of N-methyl-pyrrolidone.

4,368,055

SOLVENT BLEED-FAST, DEEP-SHADE DISPERSE DYED TEXTILE MATERIAL

Gert Motzkus, and Kurt Fohn, both of Charlotte, N.C., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Oct. 2, 1981, Ser. No. 307,774
Int. Cl.³ C09B *67/00*; D06P *3/82*
U.S. Cl. 8—662 13 Claims

1. An improved process for the aqueous disperse dyeing or printing in deep shades of a synthetic hydrophobic textile material impregnated with a solution or dispersion comprising a disperse dyestuff to produce a colored textile material, said process comprising:

(a) aftertreating said colored textile material in an aqueous alkaline solution comprising an alkali metal hydroxide bath at a pH of at least 9.0 and at a temperature of about 150°F. to about 200°F. and at a time of about 30 seconds to about 60 minutes, and thereafter

(b) heat setting said colored textile material by a heat treatment at an elevated temperature.

4,368,056

DIESEL FUEL BY FERMENTATION OF WASTES

Sammy M. Pierce, P.O. Box 84, Hamilton, Ill. 62341, and Morris Wayman, 17 Noel Ave., Toronto, Ontario, Canada (M4G, 1B2)

Filed May 20, 1981, Ser. No. 265,451
Int. Cl.³ C10L *1/18*
U.S. Cl. 44—53 9 Claims

1. A process for making a diesel fuel which comprises:

fermenting carbohydrate substrate materials in the presence of a culture of butanol forming micro-organisms, to provide an alcohol containing fermented product containing predominant amounts of butanol,

separating the alcohol component of the fermented mixture;

growing glyceride accumulating micro-organisms in a nutrient solution of carbohydrate materials;

extracting the glycerides from the micro-organisms with a portion of the fermentation produced alcohol component;

and thereafter, mixing said fermentation butanol and said micro-organism derived glycerides, to provide a diesel fuel.

4,368,057

METHOD FOR REDUCING AMMONIA CONCENTRATION IN PRE-COMBUSTED FUEL GAS USING NITRIC OXIDE

Ronald D. Matthews, 1708 Westover, Austin, Tex. 78703

Filed Oct. 14, 1980, Ser. No. 196,397
Int. Cl.³ C10K *1/00*; C10J *3/54*
U.S. Cl. 48—197 R 21 Claims

1. A process prior to combustion for selectively converting NH_3 to N_2 in a nitrogenous contaminated gaseous fuel, said process comprising the steps of:

providing a volume of pre-combusted gaseous fuel containing NH_3;

contacting said volume of gaseous fuel with NO; and

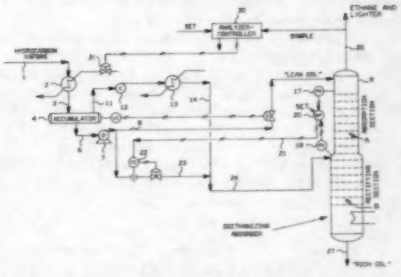
reacting said gaseous fuel and NO at a temperature and for a time sufficient to convert a portion of the NH_3 to N_2.

4,368,058

MAXIMIZING FLOW OF ABSORPTION LIQUID IN ABSORPTION METHODS

Ralph P. Crowley, and Max D. Pope, both of Bountiful, Utah, assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 30, 1980, Ser. No. 173,526
Int. Cl.³ B01D *53/14*
U.S. Cl. 55—21 6 Claims



1. A method for controlling an absorption column comprising:

(a) subjecting a mixture of vapors to conditions sufficient to condense a portion thereof to produce a lean absorption liquid,

(b) passing said lean absorption liquid to an absorption section of said absorption column,

(c) controlling the flow rate of said lean absorption liquid to said absorption section in response to a difference in pressure between two points at different levels in said absorption section, and

(d) contacting uncondensed vapors of said mixture of vapors with said lean absorption liquid in said absorption section.

6. An apparatus which comprises:

(a) an absorption column comprising an absorption section and a rectifying section,

(b) a lean absorption liquid inlet to said absorption section,

(c) means for condensing a mixture of vapors to produce lean absorption liquid,

(d) means for controlling the flow of said lean absorption liquid to said absorption section in response to a pressure

differential between two points at different levels in said absorption section and

(e) means for combining excess lean absorption liquid and uncondensed vapors and for passing said mixture to said rectifying section.

4,368,059

PROCESS OF REMOVING H_2S, CO_2, COS AND MERCAPTANS FROM GASES BY ABSORPTION

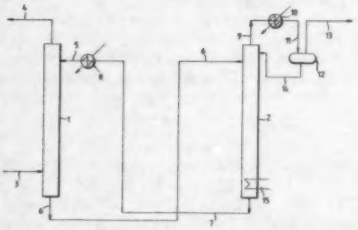
Alexander Doerges; Manfred Kriebel, and Johann Schlauer, all of Frankfurt am Main, Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 29, 1980, Ser. No. 220,345

Claims priority, application Fed. Rep. of Germany, Jan. 5, 1980, 3000250

Int. Cl.³ B01D *53/14*

U.S. Cl. 55—73 **9 Claims**



1. In a process for removing H_2S, CO_2, COS or mercaptans from a gas containing the same by absorption in an absorbent solution which is circulated between an absorbing zone and a regenerating zone and contains at least one organic base in an organic solvent in which the gaseous constituents to be removed are physically soluble, wherein the absorption is effected under a pressure of 1 to 180 bars and at temperatures of 5° to 80° C., the improvement wherein the absorbent solution used to remove H_2S, CO_2, COS and/or mercaptans from gases which contain the same contains one or more secondary or tertiary amines of the general formula $R_1—NH—R_2$ or $(R_1)_2—N—CH_2—N—(R_2)_2$, wherein R_1 and R_2 mean $CH_3—$ or $—CH_2—CH_3$ or $CH_3—CH—CH_3$ in a total amount of 0.5 to 5.0 moles per liter, and the amine has or the amines have a boiling point between 40° and 110° C. at 1 bar.

4,368,060

GAS SPARGING METHOD

Hiroshi Yanagiako; Toshio Kanai, both of Yokohama; Yoshio Kogawa, Fujisawa; Michihiro Yoshida, Kawasaki; Zenji Mashino, Soka; Shin-ichi Shimizu; Teruo Sugiya, both of Kawasaki, and Masaki Onozaki, Yokohama, all of Japan, assignors to Chiyoda Chemical Engineering & Construction Co., Ltd., Yokohama, Japan

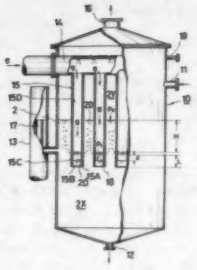
Continuation of Ser. No. 131,369, Mar. 18, 1980, abandoned, which is a continuation-in-part of Ser. No. 937,746, Aug. 29, 1978, abandoned. This application Jul. 27, 1981, Ser. No. 287,114

Claims priority, application Japan, Aug. 29, 1977, 52-102635; Oct. 19, 1977, 52-124598

Int. Cl.³ B01F *3/04*

U.S. Cl. 55—73 **11 Claims**

1. A gas sparging method comprising introducing an exhaust gas containing SO_2 through a tubular member extend into a vessel, the tubular member having (a) a side wall having only a single peripheral row of openings and (b) an open bottom end, said tubular member extending into a liquid containing a calcium compound, said liquid being contained in the vessel and having a liquid level, the openings in said side wall being below the liquid level, to bring down the level of the liquid in the tubular member to a position below the openings in said side wall, but above the open bottom end of the tubular member, the gas being dispersed in the liquid in the vessel surrounding the tubular member only through the openings in the side wall of the tubular member and without producing sloshing, the distance l between the openings in the side wall of the tubular member and the liquid level in the tubular member below said openings being in a range represented by the formula:



$$10 \text{ mm} < l < (L-10) \text{ mm}$$

wherein L is the distance between the openings in the side wall of the tubular member and the open bottom end of the tubular member and is at least 50 mm, the ratio of the total area of said openings to the cross-sectional area of the tubular member at the position of the openings being 0.01 to 2 and the internal equivalent diameter of the tubular member being 20 to 300 mm.

4,368,061

METHOD OF AND APPARATUS FOR MANUFACTURING ETHYLENE

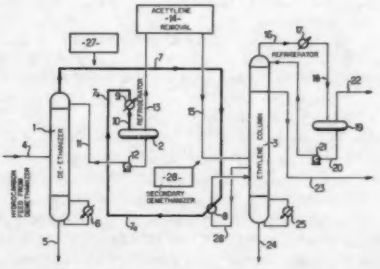
Joëlle Mestrallet, Asnieres; Gerard Heck, Louveciennes, and Victor Kaiser, Maisons Laffitte, all of France, assignors to Compagnie Francaise d'Etudes et de Construction "Technip", Paris, France

Filed Jun. 4, 1980, Ser. No. 156,382

Claims priority, application France, Jun. 6, 1979, 79 14449

Int. Cl.³ F25J *3/02*

U.S. Cl. 62—28 **7 Claims**



1. In a method for recovering ethylene from a condensate of ethylene gas comprising the steps of passing said condensate to a de-ethanizer and recovering therefrom in a gaseous condition hydrocarbons containing two carbon atoms, cooling said hydrocarbons to at least partially condense said hydrocarbons, separating the condensed and non-condensed phases, recycling said condensed phase to said de-ethanizer and feeding said

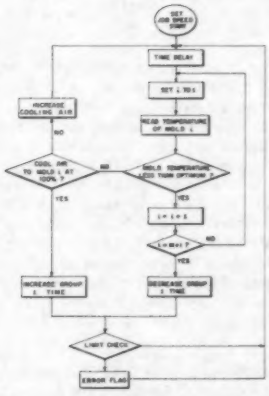
non-condensed phase to an ethylene recovery unit having associated therewith a reboiling system for heating fluid taken from said unit prior to recycle of said fluid to said unit, the improvement comprising effecting an additional heat exchange in an additional and intermediate reboiler system associated with said unit, said additional heat exchange being effected between said gaseous hydrocarbons containing two carbons recovered from said de-ethanizer and the recycling liquid from said ethylene recovery unit in said additional and intermediate reboiler system, and wherein the head of the de-ethanizer is operating at a pressure of between about 18 and 33 bars and a temperature between about −5° C. and −25° C., and the head of the ethylene recovery unit is operating at a pressure of between about 15 and 25 bars.

4,368,062

GLASSWARE FORMING SPEED CONTROL SYSTEM

Glenn H. Mapes; Jerome A. Kwiatkowski, and J. David Haynes, all of Muncie, Ind., assignors to Ball Corporation, Muncie, Ind.

Filed Jul. 8, 1981, Ser. No. 281,497
Int. Cl.³ C03B 9/40
U.S. Cl. 65—29 **27 Claims**



1. A speed control system for controlling the rate of operation of a glassware forming system comprising:

means for detecting the temperature of at least one mold of said glassware forming system;

means for comparing said temperature with a predetermined optimum temperature, said optimum temperature being chosen to be the highest desirable temperature at which said at least one mold should operate; and

means responsive to said comparing means for increasing the speed of said glassware forming system when said detected temperature is less than said optimum temperature.

21. In a glassware forming system including a plurality of sections each having molds for forming glassware containers from molten glass, each of said sections operating in an interdependent timed relationship with respect to one another, a speed control method comprising the steps of:

detecting the mean temperature of at least one mold for each of said sections, said mean temperature being an average temperature of said molds over at least a machine cycle;

comparing said detected mean temperature of said at least one mold for each of said sections with a predetermined optimum temperature level, said optimum temperature level being chosen as the highest desirable mean temperature at which said at least one mold for each of said sections should operate; and

varying in response to said comparing step the speed of said glassware forming system a predetermined amount when said detected temperature for each of said one mold for each section is different from said chosen optimum temperature.

4,368,063

METHOD OF FABRICATING A TAPERED TORCH NOZZLE

Herman M. Presby, Highland Park, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 6, 1981, Ser. No. 251,259
Int. Cl.³ C03B 23/13
U.S. Cl. 65—42 **3 Claims**

1. A method of fabricating a torch nozzle comprising the steps of:

forming an assembly of coaxially aligned glass tubes (11, 12, 13, 14) by placing spacers (20, 21, 22) between adjacent pairs of tubes (14-13, 13-12, 12-11);

heating said assembly of tubes (40) over a limited region of its length until softened;

pulling said assembly of tubes (40) in an axial direction to reduce its diameter along said limited region;

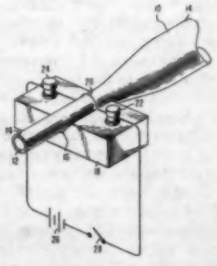
and cutting said tubes at a point (y—y) along its reduced diameter region thereby forming a torch nozzle having a tapered end.

4,368,064

METHOD FOR CLEAVING AN OPTICAL FIBER

Stefan A. Siegel, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 5, 1981, Ser. No. 270,660
Int. Cl.³ C03B 33/09
U.S. Cl. 65—105 **4 Claims**



1. A method for cleaving an optical fiber comprising the steps of

heating the fiber at a point along its length by contacting the fiber with an electrically heated wire; and

contacting the fiber, including the heated portion, with a

liquid fluorocarbon, whereby the temperature of the fiber is quenched and the fiber is cleaved.

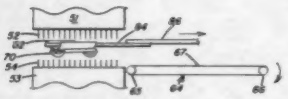
2. A method according to claim 1 further comprising the step of applying a tensile stress to the fiber during the quenching step.

4,368,065

METHOD AND APPARATUS TO REMOVE BENT, TEMPERED GLASS SHEETS FROM A COOLING STATION

Robert G. Frank, Murrysville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 19, 1981, Ser. No. 322,787
Int. Cl.³ C03B *23/035*
U.S. Cl. 65—114 **7 Claims**



1. A method of removing a bent, tempered glass sheet from a cooling station where said glass sheet is engaged against a ring-like member while blasts of tempering medium are applied against the opposite major surfaces of said supported glass sheet from spaced opposed plenum chambers at a rate sufficient to impart at least a partial temper in the glass, characterized by interposing elongated arms between one of said plenum chambers and the major surface of said bent, tempered glass sheet opposite the major surface engaging said ring-like member, causing a net flow of tempering medium to provide sufficient force in a direction such as to disengage said bent, tempered glass sheet from said ring-like member and to engage said bent, tempered glass sheet against said elongated arms, moving said arms beyond said one of said plenum chambers with said bent, tempered glass sheet engaged thereagainst in a downstream direction toward an unloading conveyor, tilting the leading edge of said bent, tempered glass sheet away from said elongated arms to transfer said bent, tempered glass sheet gently from said elongated arms to an upper run of said unloading conveyor while preventing said bent, tempered glass sheet from falling uncontrollably from said elongated arms to avoid impacting said glass sheet sharply onto said upper run.

5. Apparatus for transferring a bent, tempered glass sheet gently from a ring-like member to the upper run of an unloading conveyor comprising a cooling station having an upper plenum chamber and a lower plenum chamber, means to convey said ring-like member supporting said glass sheet through said cooling station between said plenum chambers, means to deliver tempering medium under pressure to said plenum chambers for delivery against the opposite major surfaces of said glass sheet when the latter is supported on said ring-like member, elongated arms adapted for movement along a path at a level between the level of the path taken by said ring-like member and the position occupied by said upper plenum chamber between an upstream position between said plenum chambers and a downstream position downstream of said cooling station, means to provide a net upward force of tempering medium in said upstream position between said plenum chambers when said elongated arms occupy said upstream position to disengage said bent, tempered glass sheet from said ring-like member and to engage said bent, tempered glass sheet against said elongated arms, and means to move said elongated arms to said downstream position with said bent, tempered glass sheet engaged thereagainst, an unloading conveyor located downstream of said cooling station, said unloading conveyor having an upper run occupying a position at a level slightly below the level occupied by said elongated arms, whereby, when said bent, tempered glass sheet moves into said downstream position, it tilts with its leading edge moving downward to transfer gently from engagement with said elongated arms into engagement with said upper run.

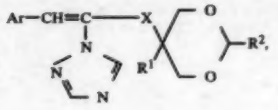
4,368,066

1,3-DIOXAN-5-YL-ALKENYLTRIAZOLES, THEIR PREPARATION, THEIR USES IN REGULATING PLANT GROWTH, AND REGULATORS CONTAINING THESE COMPOUNDS

Costin Rentzea, Heidelberg; Karl-Heinz Feuerherd; Bernd Zeeh, both of Ludwigshafen, and Johann Jung, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 1, 1981, Ser. No. 279,585
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1980, 3026140
Int. Cl.³ A01N *43/64*; C07D *405/06, 409/06*
U.S. Cl. 71—76 **10 Claims**

1. A 1,3-dioxan-5-yl-alkenyltriazole of the formula



I

where R^1 and R^2 are identical or different and each is hydrogen or alkyl of 1 to 5 carbon atoms, Ar is furanyl, thienyl, biphenylyl or naphthyl, or is phenyl which is unsubstituted or substituted by alkyl, alkoxy or alkenyl, each of 1 to 5 carbon atoms, or by fluorine, chlorine, bromine, iodine, nitro, trifluoromethyl or phenoxy, and X is C=O, —CH(OH)— or —CH(O—COR^3)—, where R^3 is unsubstituted or halogen- or alkoxy-substituted alkyl of 1 to 5 carbon atoms or alkenyl of 2 to 5 carbon atoms or aryl, and its salts and metal complexes.

4. A process for regulating plant growth which comprises applying to the plants or their habitat an effective growth regulating amount of one or more of the compounds defined in claim 1.

4,368,067

HERBICIDAL SULFONAMIDES

John C. Budzinski, West Chester, Pa., and George Levitt, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 144,856, Apr. 29, 1980, abandoned. This application Mar. 25, 1981, Ser. No. 244,172
Int. Cl.³ A01N *43/02*; C07D *239/22, 491/04, 251/16*
U.S. Cl. 71—92 **36 Claims**

1. A compound of the formula:

(Ia)

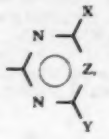
or

(Ib)

wherein

R_1 is H, C_1–C_4 alkyl, NO_2, CN, C(O)CCl_3, SO_2R_{11}, C(O)R_5 or CO_2H;

R_2 is H or C_1–C_4 alkyl;
R_3 is H, C_1–C_4 alkyl, Cl or Br;
R_4 is H, C_1–C_4 alkyl, cyanoethyl, C_5–C_6 cycloalkyl, benzyl, phenyl substituted with Cl or NO_2, or C(O)R_6;
R_5 is C_1–C_4 alkyl or C_1–C_4 alkoxy;
R_6 is C_1–C_4 alkyl, C_1–C_4 alkoxy, or NR_7R_8;
R_7 and R_8 are independently C_1–C_2 alkyl;
R_9 is H, CH_3 or OCH_3;
R_{11} is C_1–C_4 alkyl;
R_{10} is



X is CH_3 or OCH_3;
Y is H, CH_3, OCH_3, OCH_2CH_3, OCH_2CF_3, Cl, CH_2OCH_3, and
Z is CH, CCH_3 CCH_2CH_3, CCH_2CH_2Cl, CCl, CBr or CF;
and their agriculturally suitable salts; provided that
(1) when R_4 is C(O)R_6, t-butyl or phenyl substituted with Cl or NO_2, then R_1 is H or C_1–C_4 alkyl and R_1, R_2 and R_3 cannot be s-butyl or isopropyl;
(2) R_1, R_2, R_3 and R_{11} cannot be t-butyl;
(3) in Formula Ia, when R_1 is NO_2, then R_1 cannot be in the 5-position;
(4) in Formula Ia, when R_1 is not in the 5-position, R_2 and R_3 are other than H, and R_1 must be other than H unless both R_2 and R_3 are H;
(5) in Formula Ia, R_3 cannot be Cl or Br;
(6) in Formula Ib, R_1 cannot be C(O)CCl_3; and
(7) in Formula Ib, when R_3 is Cl or Br, then R_3 is in the 3-position and R_1 is in the 5-position and R_1 cannot be H or C_1–C_4 alkyl.

29. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of claim **1**.

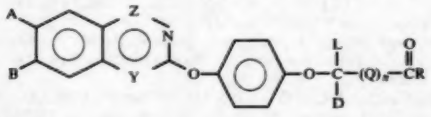
4,368,068

BENZOTRIAZINE DERIVATIVES AS SELECTIVE WEED CONTROL AGENTS

Raymond W. Luckenbaugh, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 15, 1981, Ser. No. 225,188
Int. Cl.[3] **C07D** *253/08, 401/12;* **A01N** *43/64;* **C07D** *413/12*
U.S. Cl. 71—93 **15 Claims**

1. A compound of the formula:



wherein
A is H, Cl, Br, F, CF_3, CH_3 or CH_3O;
B is H or Cl;
D is H, CH_3 or CO_2R_8;
L is H or CH_3;
Q is —CH=CH—;
n is 1;
R is Cl, XR_1, NR_2R_3, OH or OM;
M is an agriculturally suitable salt;
R_1 is C_1–C_4 alkyl, benzyl, phenyl, C_5–C_8 cycloalkyl, —$CH_2CH_2OCH_3$, —$CH_2CH_2OCH_2CH_3$, $CH_2CH_2CH_2OCH_3$, C_3–C_4 alkenyl, C_3–C_4 alkynyl, —N=CR_6R_7 or C_3–C_4 alkenyl or alkynyl optionally substituted with one Cl;
R_2 is H, C_1–C_4 alkyl, C_5–C_8 cycloalkyl, benzyl, phenyl, —OCH_3, C_3–C_4 alkenyl or —$CH_2CH_2NR_4R_5$;
R_3 is H or C_1–C_4 alkyl; or
R_2 and R_3 may be taken together to be —$(CH_2)_2$—O—$(CH_2)_2$—, —$(CH_2)_4$—, —$(CH_2)_5$—, —$(CH_2)_6$— or —$(CH_2)_2$—N—(CH_3) $(CH_2)_2$—;
R_4 and R_5 are independently methyl or ethyl;
R_6 is H or C_1–C_4 alkyl;
R_7 is H or C_1–C_4 alkyl; or
R_6 and R_7 may be taken together to be —$(CH_2)_5$— or —$(CH_2)_4$—;
R_8 is C_1–C_4 alkyl;
X is O or S; and
Y and Z are independently N or N→O; provided that:
(a) when D is CO_2R_8, then n is O and L is CH_3;
(b) when R_1 is —N=CR_6R_7, then X is O;
(c) R_2 and R_3 together contain no more than 8 carbon atoms;
(d) one of R_6 and R_7 is other than H;
(e) when A is other than Cl, then B is H;
(f) when B is Cl, then L is H, D is CH_3, n is 0, R is XR_1, and X is O.

11. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of claim **1**.

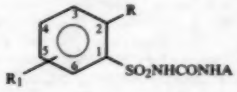
4,368,069

HERBICIDAL SULFONAMIDES

Chi-wan Chen, Silver Spring, Md., and Gregory W. Schwing, Lincoln University, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

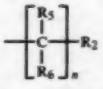
Continuation-in-part of Ser. No. 168,346, Jul. 11, 1980, abandoned. This application May 28, 1981, Ser. No. 265,179
Int. Cl.[3] **C07D** *251/46, 251/52, 251/18;* **A01N** *43/70*
U.S. Cl. 71—93 **20 Claims**

1. A compound selected from

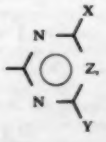


I

wherein
R is



R_2 is C_2–C_5 alkenyl, C_5–C_6 cycloalkenyl or C_2–C_3 alkenyl substituted with 1–3 chlorine atoms;
n is 0 or 1;
R_1 is H, F, Cl, Br, NO_2, CF_3, C_1–C_4 alkyl, OCF_3 or C_1–C_3 alkoxy;
R_5 and R_6 are independently H or CH_3;
A is



X is H, CH_3, OCH_3, OCH_2CH_3, OCH_2CF_3, CH_2OCH_3 or Cl;

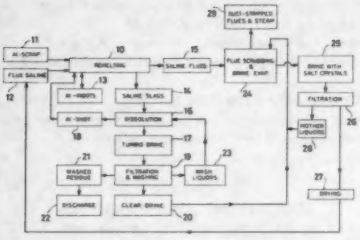
Y is CH_3, OCH_3, OCH_2CH_3, NH_2, $NHCH_3$ or $N(CH_3)_2$;
Z is N
provided that when Z is N and X is Cl, then Y is CH_3.

16. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of claim 1.

4,368,070
METHOD FOR SCRUBBING THE FLUES AND FOR RECOVERING THE SALTS IN A PROCESS FOR THE PRODUCTION OF SECONDARY ALUMINUM

Pierluigi Fracchia, Milan, Italy, assignor to A. Tonolli & C.S.p.A., Milan, Italy

Filed Nov. 17, 1980, Ser. No. 207,723
Claims priority, application Italy, Nov. 27, 1979, 27605 A/79
Int. Cl.³ C22B *21/00*
U.S. Cl. 75—0.5 B **3 Claims**



1. A process for scrubbing flue gases and recovering salts from saline slags removed from an aluminum scrap smelting furnace using a salt flux for the production of secondary aluminum wherein the saline slags withdrawn from the furnace are treated with water to obtain a virtually insoluble residue and a clear brine, said process being characterized in that it comprises the step of feeding said brine as scrubbing liquor into a Venturi scrubber into which the said flue gases are sent separately, said brine being concentrated in the Venturi scrubber by dissolving the salts entrained by said flue gases and by evaporation of the water phase until there is saturation of said brine and precipitation of salt, said salt crystallized from said brine being separated from said brine and fed back to the smelting furnace as a new source of saline flux.

4,368,071
PROCESS FOR THE MANUFACTURE OF DESULFURIZING AGENTS FOR CRUDE IRON OR STEEL MELTS

Albert Braun, Hürth-Burbach; Willi Portz, Erftstadt-Kierdorf; Georg Strauss, Erftstadt-Lechenich, and Hans-Martin Delhey, Duisburg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

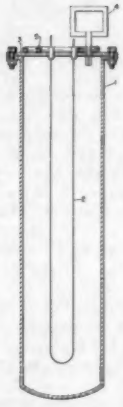
Filed Jan. 2, 1981, Ser. No. 222,086
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1979, 2952686
Int. Cl.³ C21C *7/02*
U.S. Cl. 75—0.5 R **7 Claims**

1. In the process for the manufacture of desulfurizing agents consisting essentially of calcium carbide and calcium oxide for crude iron and steel melts, the improvement which comprises: producing from lime and coke a molten mixture of calcium carbide and calcium oxide having a CaO content varying within the range 20 to 80% by weight, the rest being essentially calcium carbide; allowing the mixture to cool and solidify into a block; rough-crushing the solidified block while it still has an average temperature of more than 400° C. to particles with a size of less than 150 mm; admixing the comminuted mixture, which still has a temperature of at least 400° C., with a quantity of calcium oxide necessary to establish in the resulting mixture a total content of CaO corresponding to the CaO content of up to 90% by weight desired in the end product, and then grinding the mixture with thorough agitation at temperatures below 100° C. to particles with a size of less than 10 mm; contacting the mixture while grinding with a sufficient amount of air or nitrogen having a water content of 5 to 20 g/m^3 (at 1.013 bar and 273.15 K) until 1–6% by weight of water, related to the end product, is chemically bonded by hydrating a quantivalence of CaO to $Ca(OH)_2$.

4,368,072
IODIDE CELL VAPOR PRESSURE CONTROL

Mark B. Siddall, Albany, Oreg., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 19,327, Mar. 12, 1979, abandoned. This application May 27, 1981, Ser. No. 267,525
Int. Cl.³ C22B *34/14*; G01N *7/00*
U.S. Cl. 75—84.4 **6 Claims**



1. A method of controlling the vapor pressure in an iodide decomposition cell comprising: directly measuring the vapor pressure in the cell; and adjusting the lid temperature of the cell by controlling the rate of cooling of the lid in response to variations in the vapor pressure.

2. The method of claim 1 wherein the cell is used for the purification of zirconium.

3. The method of claim 1 wherein the cell is used for the purification of hafnium.

4,368,073
USE OF THE SODIUM SALT OF 2-MERCAPTOPYRIDINE-N-OXIDE TO SEPARATE GOLD FROM ACIDIC SOLUTIONS

Sigmund Breister, Hamden, and Joseph R. Reiner, Northford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 115,163, Jan. 24, 1980, Pat. No. 4,269,621. This application Apr. 30, 1981, Ser. No. 258,989
The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.
Int. Cl.³ C22B *11/04*
U.S. Cl. 75—108 **10 Claims**

6. A process for the selective precipitation and separation of gold from acidic solutions having a pH below about 3 and containing other metals selected from the group consisting of iron, copper, tin, lead, or mixtures thereof, which comprises the steps of:

(a) adding sodium 2-mercaptopyridine-N-oxide to cause at least a portion of said gold in said acidic solution to precipitate from said acidic solution wherein the molar ratio of

said added sodium 2-mercaptopyridine-N-oxide to said gold is less than about 1.5:1.0 without any appreciable precipitation of said other metals; and

(b) separating said precipitated gold from said acidic solution and said other metals.

4,368,074

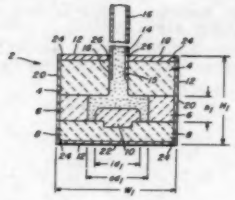
METHOD OF PRODUCING A HIGH TEMPERATURE METAL POWDER COMPONENT

William L. Otto, Jr., Leechburg, and Edward G. Flynn, Pittsburgh, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation of Ser. No. 859,086, Dec. 9, 1977, abandoned. This application Jan. 7, 1980, Ser. No. 109,853

Int. Cl.³ B22F 3/00, 3/14

U.S. Cl. 419—51 **9 Claims**



1. A method of producing a fully dense high temperature metallic component from high temperature metal powder comprising:

filling a centrally located mold cavity with a high temperature metal powder, said cavity having a shape substantially conforming to the dimensional configuration of the component to be formed as measured in the lateral direction, said cavity having a shape uniformly larger than the dimensional configuration of the component to be formed as measured in the vertical direction, said mold composed of a material having substantially the same flow stress throughout, said material able to maintain dimensional stability in a viscoelastic state at a temperature of from approximately 950° to 1300° C., said mold having at least one passageway therethrough leading to said cavity,

heating the filled mold to a temperature greater than half the melting temperature of the powder in degrees centigrade and less than the melting temperature of the powder, while applying a vacuum to the cavity of at least twenty microns of mercury,

closing the mold to provide a vacuum tight seal,

axially compressing the sealed mold while maintaining the mold within the above heated temperature range, said axial compression being in the vertical direction with respect to the cavity dimensions at a pressure of at least 345 megapascals to effect plastic flow of the metal and mold, while restricting the mold about its lateral periphery with respect to the cavity dimensions,

holding said mold in a compressed state for less than five minutes including at least 20 seconds after attaining maximum pressure, and

separating the mold materials from the component.

9. A method of producing a fully dense titanium alloy component having a low thickness to diameter ratio comprising the steps of:

filling a centrally located mold cavity with a titanium alloy powder having a flow stress greater than that of the mold material, said mold being ceramic with a steel shell thereabout, said shell having a thickness of at least 0.20 centimeters, with a centrally located die cavity therein, said cavity having a shape substantially conforming to the dimensional configuration of the dimensional configuration of the titanium alloy component to be formed, as measured in the lateral direction, said cavity having a shape uniformly larger than the dimensional configuration of the titanium alloy component to be formed as measured in the vertical direction, said ceramic mold composed of 20–35 parts by weight calcium aluminate, 60–70 parts by weight fused silica, and 3–15 parts by weight zinc borosilicate frit having substantially the same flow stress throughout, said mold material able to maintain dimensional stability in a viscoelastic state at a temperature of approximately 950° to 1300° C., said mold having at least one passageway therethrough leading to said cavity,

heating the filled mold to a temperature greater than half the melting temperature of the titanium alloy powder in degrees centigrade and less than the melting temperature of the titanium alloy powder, while applying a vacuum to the cavity of at least approximately 20 microns of mercury,

closing the mold to provide a vacuum tight seal,

axially compressing the sealed mold while maintaining the mold within the above heating range, said axial compression being in the vertical direction with respect to the cavity dimensions at a pressure of at least 345 megapascals to effect plastic flow of the metal and mold while restricting the mold about its lateral periphery with respect to cavity dimensions,

holding the mold in a compressed state for less than five minutes including at least 20 seconds after attaining maximum pressure, and

separating the mold material from the titanium component.

4,368,075

IRON BLUE PIGMENT, PROCESS FOR MAKING THE SAME AND USE

Everhard Gratzfeld, Wesseling; Eva Clausen; Helmut Reinhardt, both of Cologne, and Hans Schaefer, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 6, 1981, Ser. No. 309,523

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1980, 3038285

Int. Cl.³ C09D 11/02

U.S. Cl. 106—20 **9 Claims**

1. Iron blue pigment, characterized by a potassium content of 7.0–9.0% by weight, a sodium content of 0.5–2.0% by weight, a coloring power in accordance with DIN 53 204 and DIN 53 234 of 5–15% above Standard Vossen blue 705 and the following color intervals determined in accordance with DIN 53 204 and DIN 53 234 in conjunction with DIN 6174, in relation to Vossen blue 705 as standard:

ΔL: -0.7 to -1.5;

Δa: -0.5 to $+0.3$;

Δb: -0.6 to -2.3;

ΔC: $+0.5$ to $+2.0$.

4,368,076

INK COMPOSITION

Zenshiro Iijima, Soka, Japan, assignor to Adger Kogyo Co., Ltd., Saitama, Japan

PCT No. PCT/JP79/00004, § 371 Date Sep. 6, 1980, § 102(e) Date Sep. 5, 1980, PCT Pub. No. W080/01387, PCT Pub. Date Jul. 10, 1980

PCT Filed Jan. 6, 1979, Ser. No. 252,975

Int. Cl.³ C09D 11/00

U.S. Cl. 106—22 **13 Claims**

1. An ink composition comprising:

a liquid vehicle including water;

a source of cobalt ion and thiocyanate ion; and

a polyalkylene glycol having a molecular weight of 100–1000.

13. An ink composition having moderate viscosity consisting essentially of

a source of cobalt ion and a source of thiocyanate ion having a concentration of less than 30 percent,
a liquid vehicle including water, and
a polyalkylene glycol as a color intensifier, said polyalkylene glycol having a molecular weight of about 100 to 1000.

4,368,077

LATEX COMPOSITIONS AND PRODUCTS MADE THEREFROM

Gary W. Ceska, Coraopolis, Pa., and Gerald W. Burkhart, Parkersburg, W. Va., assignors to Polysar International, S.A., Fribourg, Switzerland

Continuation of Ser. No. 107,487, Dec. 26, 1979, abandoned.
This application Jan. 9, 1981, Ser. No. 223,805
Int. Cl.³ C04B 7/356
U.S. Cl. 106—96 12 Claims

1. An improved concrete composition comprising Portland cement, aggregate, water and a latex composition comprising a latex of a polymer containing a wax additive whereby said concrete composition when cured provides increased resistance to penetration by liquids.

4,368,078

PROCESS FOR THE PREPARATION OF VISCOSE AND PROCESS FOR THE SPINNING OF THE VISCOSE THUS OBTAINED

Gianfranco Angelini, Buscate, and Ugo Paoletti, Monza, both of Italy, assignors to Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy and Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 6, 1980, Ser. No. 157,109
Claims priority, application Italy, Jun. 15, 1979, 23657 A/79
Int. Cl.³ C08L 1/24
U.S. Cl. 106—164 12 Claims

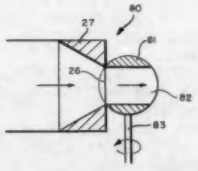
1. A process for the xanthation of alkali-cellulose which comprises reacting alkali-cellulose with an amount of CS_2 which is in excess of the desired xanthate substitution degree, said reaction being carried out at a pressure which increases during the reaction from an initial pressure of about 110 mm Hg to a final pressure of about 400–500 mm Hg and at a temperature which varies from an initial temperature of about 20° C. to a final temperature of about 23°–25° C. and upon achieving the desired xanthate substition removing unreacted CS_2 from the reactor by application of a vacuum.

4,368,079

APPARATUS FOR CHEMICAL CONVERSION OF MATERIALS AND PARTICULARLY THE CONVERSION OF CELLULOSE WASTE TO GLUCOSE

Barry A. Rugg, New York, N.Y., and Walter Brenner, Teaneck, N.J., assignors to New York University, New York, N.Y.

Division of Ser. No. 131,340, Mar. 18, 1980, Pat. No. 4,316,747.
This application May 18, 1981, Ser. No. 264,245
Int. Cl.³ B01J 3/04, 4/00
U.S. Cl. 127—1 6 Claims



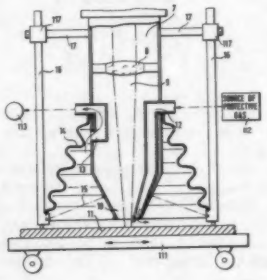
1. An apparatus for the conversion of waste cellulose to glucose by dilute acid hydrolysation, comprising: extruding means including a housing having an inlet port receptive of cellulose to be converted, an outlet port, a reaction zone therebetween and twin corotational screws for continuously conveying the cellulose through the reaction zone and to the outlet port; means for continuously injecting dilute sulfuric acid into the reaction zone; means for producing an elevated temperature and pressure within the reaction zone including means for continuously injecting steam or superheated water at elevated pressure into the reaction zone; means for continuously feeding the cellulose to the inlet port; means for at least quasi-continuously discharging the reacted cellulose from the extruding means while maintaining the elevated temperature and pressure within the reaction zone including means for forming a dynamic seal at the upstream end of the reaction zone; valve means disposed downstream of the outlet port for controlling the discharge; and means for cyclically activating said valve means.

4,368,080

METHOD OF REMOVING RUST FROM METALLIC OBJECTS

Robert Langen, Quienstrasse 29, D-6600 Saarbrücken, and Rasmus Beck, Nachtigallenstrasse 62, D-6978 Neu Isenburg, both of Fed. Rep. of Germany

Filed Oct. 27, 1980, Ser. No. 201,268
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1979, 2943107
Int. Cl.³ B08B 7/00
U.S. Cl. 134—1 10 Claims



1. A method of removing rust from the surface of an object consisting of oxidizable metal, comprising the step of focusing a laser beam upon the rust to heat the rust to evaporation temperature and to thereby effect evaporation of rust from the surface of said object.

4,368,081

METHOD FOR REMOVING RESIDUAL HYDROGEN PEROXIDE ON A STERILIZED FOOD PACKAGE

Kunio Hata; Kihachiro Oshima; Isao Kano; Norio Matsukura; Hiroaki Umeda; Motoi Matsui; Tetsushi Ashida; Yoichi Nishiguchi, and Nobushige Yasui, all of Tokyo, Japan, assignors to Jujo Paper Co., Ltd., Tokyo, Japan

Filed Aug. 20, 1981, Ser. No. 294,805
Claims priority, application Japan, Sep. 5, 1980, 55/122351
Int. Cl.³ B08B 3/08
U.S. Cl. 134—2 4 Claims

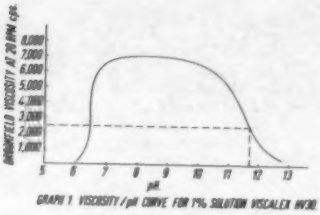
1. In a method for removing residual hydrogen peroxide on packing material for foodstuff sterilized with hydrogen peroxide, the improvement comprising removing said residual hydrogen peroxide on the surface of the packing material for foodstuff by applying to the surface of said packing material an anti-oxidant or reducing agent selected from the group consisting of L-ascorbic acid, stearic acid ester of L-ascorbic acid, sodium salt of L-ascorbic acid, sorbic acid, potassium salt of sorbic acid, sodium salt of sorbic acid, gallic acid isoamylester, gallic acid propylester, dibutylhydroxytoluene, butylhydroxyanisole, α-tocopherol, cysteine, and glutathione of reduced type.

4,368,082

PAINT STRIPPING METHOD

Philip Poels, Sudbury, England, assignor to Strippers Paint Removal Services Ltd., Suffolk, England

Continuation-in-part of Ser. No. 131,317, Mar. 18, 1980, abandoned. This application Apr. 6, 1981, Ser. No. 251,560
Claims priority, application United Kingdom, May 17, 1979, 7917140
Int. Cl.³ B08B 3/08; C09D 9/00
U.S. Cl. 134—4 2 Claims



GRAPH 1 VISCOSITY / pH CURVE FOR 1% SOLUTION VISCALEX HV30

1. A method of stripping paint having free carboxyl groups from a previously painted surface at a single application, which comprises applying to said painted surface a composition comprising an alkali metal hydroxide, a solvent and a polyacrylate thickening agent comprising an aqueous dispersion of from 15 to 45% by weight of a cross-linked carboxylated copolymer of acrylic acid with methacrylate having a pH lower than that of said alkali metal hydroxide in which the viscosity of said agent falls above a predetermined transition pH, said hydroxide being present in said composition in an amount sufficient to adjust the pH of the composition to just above said transition pH, whereby the viscosity of the composition increases as the pH falls in use; and allowing the applied composition to remain in contact with said painted surface for sufficient time to destroy the adhesion of the paint to the painted surface and then rinsing the paint and composition from said substrate.

4,368,083

PROCESS FOR DOPING SEMICONDUCTORS

Michel Brael, Veurey-Voroize, and Michel Floccari, Grenoble, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jan. 23, 1981, Ser. No. 227,966
Claims priority, application France, Feb. 1, 1980, 80 02238
Int. Cl.³ H01L 21/265, 21/324, 21/263
U.S. Cl. 148—1.5 11 Claims

1. Process for doping semiconductors consisting in implanting dopant particles in a substrate and in rendering them electrically active, so as to modify the physical properties of the substrate, comprising the following successive steps of:

effecting an implantation by recoil of the dopant particles in the substrate, which consists in depositing on the surface of the substrate a layer of material containing dopant particles, and in bombarding said layer by means of a beam of bombarding particles, so as to cause the dopant particles to penetrate in the substrate;

eliminating the layer of material deposited on the surface of the substrate;

effecting transitory annealing, which consists in bringing to the surface, or to the level of the first implanted layers, for a very short length of time, an energy density such that

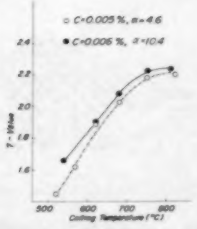
very high temperatures are reached, so as to produce a local liquefaction of the first layers of the substrate.

4,368,084

METHOD FOR PRODUCING COLD ROLLED STEEL SHEETS HAVING A NOTICEABLY EXCELLENT FORMABILITY

Toshio Irie, Chiba; Susumu Sato, Ichihara, and Osamu Hashimoto, Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed May 28, 1981, Ser. No. 267,930
Claims priority, application Japan, May 31, 1980, 55-73179; Jul. 30, 1980, 55-103666
Int. Cl.³ C21D 8/06, 9/48
U.S. Cl. 148—12 C 8 Claims



1. A method for producing cold rolled steel sheets having a noticeably excellent formability, comprising preparing a steel consisting of not more than 0.008% of C, not more than 0.20% of Si, 0.04–0.30% of Mn, not more than 0.03% of P, 0.01–0.10% of Al, a content of Al being more than N%×4, not more than 0.02% of S, not more than 0.01% of N, 0.01–0.07% of Nb, a content of Nb being C%×3−{C%×8+0.02}%, and the remainder being substantially Fe, hot rolling the steel at a total reduction of not less than 90%, a rolling speed of not less than 40 m/min in finishing rolling and a finishing temperature of not lower than 830° C., coiling the hot rolled strip at a temperature of 600°–800° C., cold rolling the coiled strip to obtain a cold rolled strip having final gauge and then continuous annealing the cold rolled strip within a temperature range of 700°–900° C. for 10 seconds–5 minutes.

4,368,085

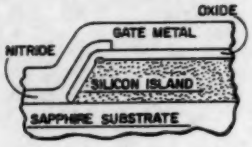
SOS ISLAND EDGE PASSIVATION STRUCTURE

John L. Peel, Sandy, Utah, assignor to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 85,148, Oct. 15, 1979, Pat. No. 4,242,156. This application Jul. 8, 1980, Ser. No. 166,950

Int. Cl.³ H01L *27/12*

U.S. Cl. 148—33.3 **1 Claim**



1. A silicon-on-sapphire semiconductor structure comprising:

a sapphire substrate;

a silicon island disposed on said sapphire substrate, having a major surface including an upper first surface and a side second surface separated by an edge;

an oxide layer disposed entirely over said major surface of said silicon island; and

a silicon nitride layer disposed entirely over said side second surface and in part over said upper first surface, the nitride layer extending over a portion of said upper first surface so that said nitride layer covers the edge between said upper first surface and said side second surface.

4,368,086

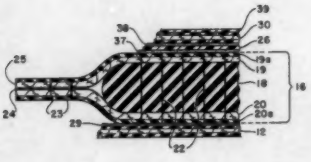
METHOD OF FABRICATING AN AIRCRAFT SELF-SEALING FUEL TANK

Herbert F. Villemain, Cuyahoga Falls, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 133,767, Mar. 25, 1980. This application Oct. 22, 1981, Ser. No. 313,879

Int. Cl.³ B32B *31/10, 7/08*

U.S. Cl. 156—93 **2 Claims**



1. The method of constructing a self-sealing fuel tank, comprising:

a. applying an innerliner member to a building form;

b. cementing a plurality of sealant panels to each surface of the innerliner; each of said sealant panels formed by cutting a layer of sealant compound to the desired size and shape, placing said layer of sealant compound between two layers of cloth fabric of the desired sizes and shapes and rubberized on the sides remote from the sealant compound layer, said fabric layers extending beyond the edges of the sealant compound, sewing the cloth fabric and sealant compound layers with substantially parallel rows of stitches, and forming connecting flanges by sewing together the fabric layers extending beyond the sealant compound with circumferential stitches adjacent the edges of the sealant compound layer;

c. cementing the flanges of each panel to the flanges of the adjacent panels;

d. applying a fuel barrier layer to the outer surface of the sealant panels and joints;

e. cementing an outer covering layer to the external surface of the fuel barrier;

f. applying a coating of fuel resistant lacquer to the outer surface of the covering layer;

g. curing the tank for two hours at 260° F. under 60 psig steam pressure; and

h. removing said building form from the cured tank.

4,368,087

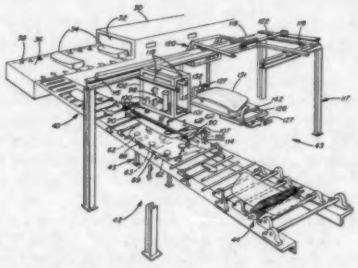
ARRANGEMENT OF VACUUM CUPS TO ASSEMBLE ONE OR MORE BENT GLASS SHEETS WITH A SHEET OF FLEXIBLE INTERLAYER MATERIAL

James L. Valimont, and Joseph D. Kelly, both of Cheswick, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 28, 1981, Ser. No. 287,600

Int. Cl.³ B32B *17/00*

U.S. Cl. 156—102 **5 Claims**



1. A method of assembling a subassembly comprising a bent glass sheet of a desired shape and a flexible sheet of interlayer material for lamination into a bent subassembly wherein said flexible sheet of interlayer material is moved into alignment with said bent glass sheet while supported against a rigid supporting surface conforming to said desired shape to bring a surface of said flexible sheet into alignment with a concave surface of said bent glass sheet, moving said flexible sheet of interlayer material into aligned contact with said concave surface, and removing said supporting surface, wherein said bent glass sheet is supported at spaced areas along its convex surface on spaced flexible support members disposed in a curved surface conforming generally to said desired shape and movable in unison toward and away from the convex surface of the bent glass sheet,

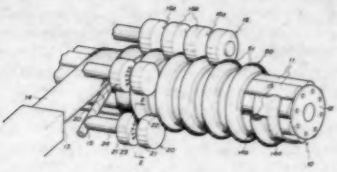
said method comprising aligning at least one of said spaced flexible support members to face the central portion of a major surface of said bent glass sheet opposite said concave surface, biasing said at least one of said spaced flexible support members relative to the other flexible support members toward said central portion, thereby temporarily biasing the central portion of said bent glass sheet toward said rigid supporting surface and bringing said sheets together to first engage the central portion of said supported flexible sheet with said bent glass sheet and to gradually increase the area of engagement from said central portion to the edge of said sheets to force air and other vapors from the interfacial surface between said bent glass sheet and said flexible sheet of interlayer material as the area of engagement between said flexible sheet and said bent glass sheet increases outward toward the edge of said sheets, thereby reducing said central portion bias to form a subassembly of said flexible sheet of interlayer material and said bent glass sheet and separating said rigid supporting surface from said flexible sheet of interlayer material when said subassembly is formed.

4,368,088

METHOD OF MANUFACTURING CORRUGATED TUBE

Hiroshi Asakura, Oiso; Masaharu Kusaka, Yokosuka; Mitsuo Hirata, and Akio Machihara, both of Yokohama, all of Japan, assignors to Toyo Kagaku Kabushiki Kaisha, Kamakura, Japan

Filed Dec. 8, 1980, Ser. No. 213,720
Claims priority, application Japan, Dec. 20, 1979, 54/164689
Int. Cl.³ B65H 81/00; F16L 11/08
U.S. Cl. 156—143 8 Claims



1. A method of continuously manufacturing a corrugated tube having axially extending spiral convolutions to define a corrugated outer wall configuration in longitudinal cross-section and a smooth inner wall surface along the length of the tube, comprising the steps of arranging in a circular array a plurality of rollers each rotating at the same speed such that an imaginary cylinder is defined about its central axis by said rollers, the longitudinal axes of said rollers being parallel to each other but offset with respect to said central axis: continuously feeding a flat non-reinforced strip of synthetic resin material in a softened state generally perpendicularly to the length of said rollers in such a manner that said strip is helically wrapped around and advanced axially along said imaginary cylinder with portions of adjacent turns of the strip overlapping one on another for welding together; continuously feeding a flexible core member and embedding it between the overlapping portions of adjacent turns of the strip to raise the upper one of said overlapping portions so as to define spiral raised convolutions around the tube, said flexible core member being in the form of a corrugated tube having convolutions therearound to define a corrugated outer wall; and pressing a pressure roller against the overlapping portions of the strip having said flexible core member embedded therein; whereby a corrugated tube is formed having spiral convolutions defined by the embedded flexible core member around the outer periphery of the tube along the length thereof and a smooth inner wall surface.

5. A method of continuously manufacturing a corrugated tube having an outer wall with spiral convolutions and a smooth inner wall comprising the steps of:

arranging in a circular array a plurality of rollers extending parallel to each other to define a cylindrical contour, said rollers rotating in the same direction at the same speed;

continuously feeding a flat strip of a synthetic resin material in a softened state to said rollers forming the cylindrical contour at an angle so that said strip is helically wrapped around the rollers to advance axially therealong to thereby overlap adjacent turns of the strip one on another;

continuously feeding a flexible core member onto said flat strip so that when the succeeding turn of said flat strip is overlapped on the previous turn of said flat strip, the flexible core member is embedded between the overlapped turns of said flat strip, one longitudinal edge portion of the flat strip disposed on the core member being located adjacent to the core member of the previous turn and the other longitudinal edge portion of the flat strip extending beyond the previous turn of the flat strip to directly contact with the rollers to form a part of the smooth inner wall; and

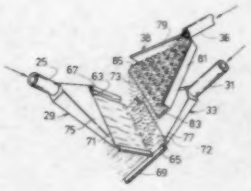
pressing said flat strip onto at least one of the rollers forming the cylindrical contour to abut the flat strip onto at least both the previous turn of the flat strip and the core member disposed on the previous turn so that the abutting portion is bonded together and the smooth inner wall is formed; said pressing said flat strip at least including a first pressing stage for pressing said one longitudinal edge portion of the flat strip located adjacent to the core member of the previous turn onto the previous turn of the flat strip to connect said edge portion to the previous flat strip, shaping said convolutions into smooth configuration without depressions by forcibly attracting with a suction force the convolutions away from the rollers forming the cylindrical contour while the flat strip and the core member are still soft before hardening, and a second pressing stage for pressing said overlapped turns of said flat strip containing said edge portion of the flat strip in said first pressing stage and the core member located therebetween, so that the flat strip can be located on and bonded over the previous turn of the flat strip and the core member.

4,368,089

METHOD AND APPARATUS FOR MANUFACTURING DENTIFRICE CONTAINING DISPERSED SPECKLES

John F. Smith, New Providence, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Sep. 30, 1981, Ser. No. 307,308
Int. Cl.³ B29B 5/00; B29C 19/00
U.S. Cl. 156—243 17 Claims



1. A method for manufacturing a dentifrice containing dispersed discrete speckles therein which comprises producing a plurality of ribbon shaped streams of a gel or paste dental composition which constitutes a major proportion of a dentifrice, producing a stream of speckles to be distributed throughout the dentifrice, directing said stream of speckles onto a surface of at least one of the streams of gel or paste dental composition and controlling the relative feed rates and the proportions of the gel or paste dental composition and the speckles to be dispersed therein so that when the stream of speckles contacts the stream of gel or paste the speckles are insufficient to cover the ribbon surface presented to the curtain, so that the speckles adhere to the gel or paste ribbon, and bringing together at least two of the plurality of streams of the dental composition so that major surfaces thereof adhere together and sandwich the speckles between them.

4,368,090

METHOD OF USING COPOLYETHER ESTER AMIDES AS THERMOPLASTIC ADHESIVES FOR HEAT SEALING TEXTILES

Salih Mumcu, and Rainer Feldmann, both of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Filed Nov. 17, 1980, Ser. No. 207,717
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1979, 2949064
Int. Cl.³ B32B 31/12, 7/14
U.S. Cl. 156—283 8 Claims

1. In the powder dot process for heat sealing textiles comprising:

applying a layer of isolated spots of heat sealable adhesive to one side of a textile substrate; and

securing said textile substrate to a textile upper fabric with heat and pressure applied to said heat sealable adhesive, the improvement comprising said heat sealable adhesive comprising copolyether ester amide block copolymers having melting points between about 85° and 140° C. produced from:

(A) polyamide forming compounds having melting points between about 90° and 150° C. comprising not less than 30% by weight laurylactam and other polyamide forming compounds selected from the group consisting of omega-aminocarboxylic acids, equivalent amounts of aliphatic dicarboxylic acids and diamines and mixtures thereof; and

(B) polyether ester forming compounds comprising aliphatic dicarboxylic acids and polyalkylene oxide diols;

wherein the weight ratio of A to B is from about 93/7 to 35/65.

4,368,091

METHOD FOR PROVIDING THE INNER SURFACE OF A PIPE WITH A FLEXIBLE TUBULAR LINING MATERIAL THROUGH A LIQUID RESIN UNDER PRESSURE

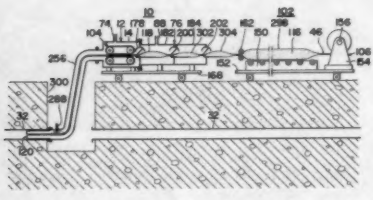
Hisao Ontsuga, Tokyo; Akio Morinaga, Fujisawa, and Akira Morita, Osaka, all of Japan, assignors to Tokyo Gas Co. Ltd., Tokyo and Ashimori Industry Co., Ltd., Osaka, both of, Japan

Filed Dec. 28, 1979, Ser. No. 107,870

Claims priority, application Japan, Dec. 29, 1978, 53-162093; Sep. 20, 1979, 54-121415

Int. Cl.³ B29C *17/07*

U.S. Cl. 156—287 **13 Claims**



1. A method for providing the inner surface of a pipe with a flexible tubular lining material through a liquid resin under pressure which comprises annularly fixing one end of a flexible tubular lining material, applying fluid pressure to th rear of the annularly fixed position of said flexible tubular lining material, turning said tubular lining material inside out at a turning point formed in rear of said fixed position while allowing said turning point to advance within a pipe and attaching the evaginated tubular lining material onto the inner surface of said pipe under said fluid pressure, characterized by forming a reservoir of a liquid resin enclosed in the interior of the unevaginated portion of said tubular lining material in rear of said annularly fixed portion while applying external fluid pressure to the portions of said tubular lining material where said reservoir is formed, passing said tubular lining material through said reservoir to apply said liquid resin onto the inner surface of said tubular lining material, squeezing said tubular lining material to adjust the amount of said liquid resin applied, supplying said tubular lining material to said turning point where said tubular lining material is evaginated and attaching the evaginated tubular lining material under said fluid pressure onto the inner surface of said pipe through said liquid resin wherein (A) a step for forming a liquid resin pool containing a substantial part of said liquid resin in the interior portion of said tubular lining material in rear of said reservoir and inhibiting, in a first position between said reservoir and said liquid resin pool, the forward movement toward said reservoir of said liquid resin attached to the inner surface of said tubular lining material passing through said liquid resin pool while forming a first advanced liquid resin pool in rear of said first position and (B) another step for inhibiting, in a second position between said first position and said liquid resin pool, the forward movement toward said first position of said liquid resin attached to the inner surface of said tubular lining material passing through said liquid resin pool while allowing said liquid resin in said first advanced liquid resin pool to advance to said reservoir, are repeated to supply said liquid resin in said liquid resin pool intermittently to said reservoir.

13. A method for providing the inner surface of a pipe with a flexible tubular lining material through a liquid resin under pressure which comprises annularly fixing one end of a flexible tubular lining material, applying fluid pressure to the rear of the annularly fixed position of said flexible tubular lining material, turning said tubular lining material inside out at a turning point formed in rer of said fixed position while allowing said turning point to advance within a pipe and attaching the evaginated tubular lining material onto the inner surface of said pipe under said fluid pressure, characterized by forming a reservoir of a liquid resin enclosed in the interior of the unevaginated portion of said tubular lining material in rear of said annularly fixed portion while applying external fluid pressure to the portion of said tubular lining material where said reservoir is formed, passing said tubular lining material through said reservoir to apply said liquid resin onto the inner surface of said tubular lining material, squeezing said tubular lining material to adjust the amount of said liquid resin applied, supplying said tubular lining material to said turning point where said tubular lining material is evaginated and attaching the evaginated tubular lining material under said fluid pressure onto the inner surface of said pipe through said liquid resin wherein the amount of said liquid resin applied onto the inner surface of said tubular lining material is adjusted by regulating the fluid pressure applied externally to the portion of said tubular lining material where said reservoir is formed in relation to the fluid pressure applied to the portion of said tubular lining material in rear of said turning point.

4,368,092

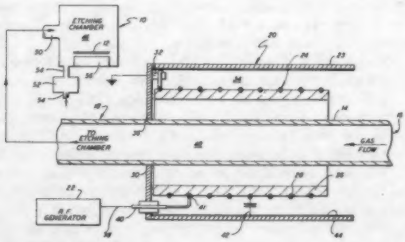
APPARATUS FOR THE ETCHING FOR SEMICONDUCTOR DEVICES

George N. Steinberg, and Alan R. Reinberg, both of Westport, Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 250,364, Apr. 2, 1981. This application Aug. 5, 1981, Ser. No. 290,270

Int. Cl.³ C23F *1/00*; C23C *15/00*

U.S. Cl. 156—345 **7 Claims**



1. Apparatus for etching semiconductor devices comprising, in combination:

an etching chamber adapted to contain the semiconductor device to be etched;

an electrodeless etching plasma forming chamber having an inlet connected to a source of continuously flowable etching gas and having an outlet connected to said etching chamber in fluid flow communication;

a helical inductive resonator coupler for coupling a source of R.F. electrical power into said electrodeless plasma forming chamber for continuously forming etching plasma

from the etching gas flowing therethrough, said helical inductive resonator coupler comprising:

a grounded hollow cylinder of electrically conductive material with a grounded base member at one end thereof;

a helically coiled wire conductor concentrically mounted within the cylinder and spaced from the inner walls thereof;

means for mounting said plasma forming chamber substantially concentrically within the coil;

the end of the coil toward said base member being grounded, and

electrical coupling means for applying to the coil a source of R.F. electrical power that is sufficient to maintain a discharge in said plasma forming chamber mounted within the coil, said coupling means applying power into the coil at a position near, but spaced from, the grounded end thereof, said position being selected such that, when said plasma forming chamber is in operation by the R.F. power being applied to the coil, the impedance of said plasma forming chamber and coupling means at said position substantially matches the impedance of said R.F. power source, whereby when said R.F. power is applied to the coil, and before a discharge is ignited in said plasma forming chamber, a voltage maximum occurs at the end of the coil remote from said grounded end and creates a potential extending through the portion of said plasma chamber between said end remote from the grounded end and said base member for ionizing the gas in said plasma forming chamber.

4,368,093

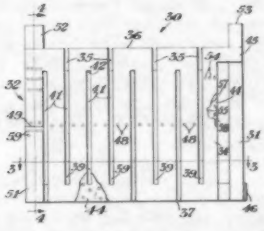
HEATING ELEMENTS FOR THERMOPLASTIC LAMINATION

Robert A. Hay, II, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 23, 1981, Ser. No. 236,958

Int. Cl.³ B65C 1/00

U.S. Cl. 156—443 **16 Claims**



1. An apparatus for the thermal bonding of synthetic resinous bodies wherein the apparatus provides a heated platen to be disposed between adjacent bodies to be joined, means for moving said platen relative to the bodies to be joined, means to heat the platen to a temperature sufficient to heat plastify adjacent surfaces of the bodies to be joined, and means to contact said heated surfaces which on cooling provide a bond between adjacent foam bodies, the improvement which comprises an improved heating platen, the heating platen being of laminar construction and generally planar configuration, the heating platen comprising a first electrically conductive lamina and a second electrically conductive lamina, the first and second lamina being affixed to each other in generally face to face relationship; the first and second lamina having a first electrical terminal and a second common electrical terminal, the first and second lamina each defining a plurality of slots wherein the first and second lamina are joined at a plurality of locations to provide mutual mechanical reinforcing to minimize bending of the platen under service conditions with the further limitation that the platen comprises two generally like heating elements joined together along a centrally located line and electrically insulated from each other except at the centrally located line and electrical feed terminals.

4,368,094

PRODUCTION OF CORRUGATED CARDBOARD

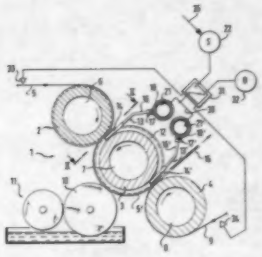
Johann Mayer, Am Bergl 7, 8475 Saltendorf; Johann Maier, Döberlstrasse 16, 8480 Weiden; Hans Mosberger, Hüttenwerk 10, 8481 Weiherhammer, and Michael Eri, Elchstrasse 18, 8481 Ullersricht, all of Fed. Rep. of Germany

Filed Oct. 9, 1980, Ser. No. 195,520

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1979, 2952563

Int. Cl.³ B31F 1/20, 1/00

U.S. Cl. 156—462 **15 Claims**



1. Apparatus for the production of corrugated cardboard typically having a coverlining on at least one side, comprising an upper, longitudinally grooved roll; a lower, longitudinally grooved roll additionally having a plurality of outwardly open annular grooves distributed along its length, said annular grooves being connected to a suction source through respective nozzles held by carriers; said nozzles being arranged in pairs with the nozzles in each pair generally opposing one another in respective regions of web entry upon and exit from said lower grooved roll, said nozzles in each pair positioned in conforming fit into the same annular groove, wherein said annulr grooves have a width of about 3 mm or less, and further comprising a blower interruptedly connected by control means to at least the outermost of said nozzles fitted into those of said annular grooves which are located most adjacently to respective ends of said lower grooved roll.

4,368,095

HEATING DEVICE FOR BLANK-SHAPING APPARATUS

Helmut Gross, and Hermann Hauck, both of Hochheim, Fed. Rep. of Germany, assignors to AB Akerlund & Rausing, Sweden

PCT No. PCT/SE80/00061, § 371 Date Nov. 3, 1980, § 102(e) Date Oct. 27, 1980, PCT Pub. No. WO80/01776, PCT Pub. Date Sep. 4, 1980

PCT Filed Mar. 3, 1980, Ser. No. 201,403

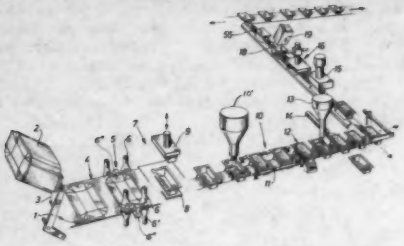
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1979, 2908396

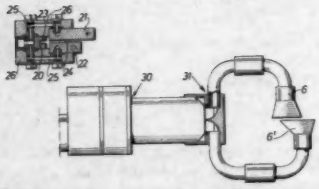
Int. Cl.³ B32B 31/00; C09J 5/02

U.S. Cl. 156—497 **10 Claims**

1. Apparatus for heating a synthetic coating disposed on two opposite surfaces of a rectangularly-shaped cardboard blank to a temperature sufficiently high to soften the synthetic coating, comprising heating means for heating the synthetic coating, said heating means including a plurality of jets, at least one of said jets being arranged so as to discharge hot air towards one of the two opposite surfaces of the cardboard blank in the direction of a corner thereof and at least another one of said jets being arranged so as to discharge hot air towards the other of the two opposite surfaces of the cardboard blank in the direction of a corner thereof, and inhibiting means for inhibit-

ing heat transferred from the synthetic coating to the cardboard blank from raising the temperature of a predetermined inner portion of the cardboard blank beyond a selected value, which if exceeded could detrimentally affect the cardboard blank, said inhibiting means including a first cooling member positioned alongside a peripheral edge of the cardboard blank





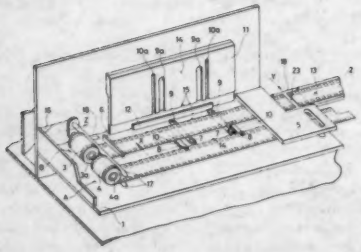
and adjacent the synthetic coating disposed on said one surface of the cardboard blank and a second cooling member positioned alongside a peripheral edge of the cardboard blank and adjacent the synthetic coating disposed on said other surface of the cardboard blank, each of said first and second cooling members having conveying means for conveying coolant through said first and second cooling members.

4,368,096

PHOTOGRAPHIC FILM SPLICER

Kazuhiko Kobayashi, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 25, 1981, Ser. No. 296,022
Claims priority, application Japan, Aug. 29, 1980, 55-119207
Int. Cl.³ B65H *21/02*
U.S. Cl. 156—502 **7 Claims**



1. A photographic film splicer for splicing the rear edge of a preceding film with the front edge of a succeeding film, each of said films being in the form of a roll having its rear edge fastened to a respective spool, and each of said films having its front and rear edges cut when removed from said respective spool, the improvement comprising:

a first film handling station including cutting means for cutting the front edge of said succeeding film while said succeeding film extends from its respective spool in a first direction;

a second film handling station positioned in parallel to said first film handling station and including second cutting means for cutting the rear edge of said preceding film, and further including splicing means for splicing said preceding and succeeding films; and

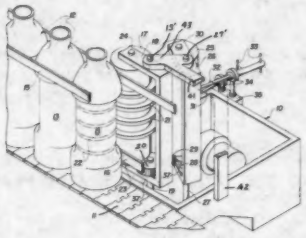
transverse film shifting means for moving said succeeding film transversely of said first direction from said first film handling station to said second film handling station.

4,368,097

ADJUSTABLE GLUE APPLICATOR ROLLS FOR CONTAINER LABELING MACHINE

Henry W. Clowe, 3600 Old Canton Rd., Jackson, Miss. 39216

Filed Sep. 3, 1981, Ser. No. 299,077
Int. Cl.³ B05C *1/06*
U.S. Cl. 156—578 **7 Claims**



1. In a glue pot assembly for a container labeling machine of the type wherein upright containers having recessed and non-recessed labeling areas of substantially different diameters are moved in succession past a gluing station, a glue pot fixedly disposed at the gluing station, glue applicator and fountain rolls on the glue pot and having spaced parallel upright axes, separate yokes rotatably supporting the glue applicator and fountain rolls for independent adjustment horizontally relative to each other and relative to the labeling areas of the containers, spaced parallel upright axis drive shafts on the glue pot also forming pivot elements for the yokes, separate and independent drive gearing for the glue applicator and fountain rolls including two driving gears on said drive shafts coaxial with the yoke pivot axes, the drive shafts having their parallel upright axes spaced from the rotational axes of the glue applicator and fountain rolls on said yokes, and independently operable adjusting screw shafts for the yokes on the glue pot across the pivot axes of the yokes and having swiveled connections with the yokes and with the glue pot, whereby the glue applicator and fountain rolls can be swung with the yokes independently on the pivot axes of the yokes while being continuously driven in rotation through usbstantial arcs of movement sufficient to maintain engagement of the glue applicator roll with either the recessed or non-recessed labeling areas of containers.

4,368,098

EPITAXIAL COMPOSITE AND METHOD OF MAKING

Harold M. Manasevit, Anaheim, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

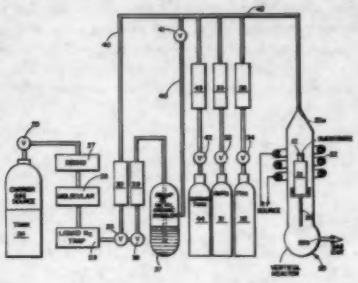
Continuation of Ser. No. 385,028, Aug. 2, 1973, abandoned, which is a continuation of Ser. No. 64,835, Oct. 1, 1969, abandoned, which is a continuation-in-part of Ser. No. 705,213, Feb. 13, 1968, abandoned. This application Apr. 7, 1978, Ser. No. 894,367
Int. Cl.³ C30B *25/02, 25/10, 25/18;* H01L *21/205*
U.S. Cl. 156—606 **72 Claims**

1. An organo-metallic process for producing an epitaxial

film of Group III–V semiconductor disposed on a single crystal substrate, said process employing an open reactor and comprising the steps of:

heating said substrate in said open reactor,

introducing into said open reactor a fist material containing a hydride or halide-free alkyl compound of at least one



Group V constituent of said semiconductor, and, as a second material, at least one halide-free alkyl compound containing at least one of the Group III constituents of said semiconductor,

and

exhausting said open reactor to pressure not greater than one atmosphere.

4,368,099

DEVELOPMENT OF GERMANIUM SELENIDE PHOTORESIST

Paul G. Huggett, Zurich, and Klaus Frick, Herrliberg, both of Switzerland, assignors to RCA Corporation, New York, N.Y.

Filed Feb. 5, 1982, Ser. No. 346,180

Int. Cl.³ H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—628 **7 Claims**

1. In a method of forming a pattern in a resist layer of germanium selenide on a substrate comprising:

(a) coating the germanium selenide layer with a photosensitive silver-containing material;

(b) irradiating a portion of the silver-containing coating to provide a corresponding silver-doped portion of the germanium selenide layer;

(c) removing the non-irradiated portion of the silver-containing coating; and

(d) plasma etching the germanium selenide layer with an etchant gas to remove that portion not doped with silver,

the improvement comprising utilizing as the etchant gas in step (d) sulfur hexafluoride.

4,368,100

PROCESS FOR PRODUCING A SPRAY-DRIED AGGLOMERATED SOLUBLE COFFEE PRODUCT

Richard R. Pyves, Pointe Claire, and James W. Jeffery, Agincourt, both of Canada, assignors to General Foods Inc., Toronto, Canada

Continuation-in-part of Ser. No. 51,642, Jun. 25, 1979, abandoned. This application Mar. 3, 1981, Ser. No. 239,946

Claims priority, application Canada, Jun. 28, 1978, 306392

Int. Cl.³ B01D *1/18*

U.S. Cl. 159—48.1 **9 Claims**

1. A process for producing a spray dried agglomerated soluble coffee product which comprises:

(a) providing an aqueous soluble coffee extract having flow rate fluctuations which are controlled to uniformly cycle between set maximum and minimum flow rates;

(b) combining an inert gas at substantially constant pressure with said extract, said inert gas having a flow rate which is directly out of phase with said extract flow rate;

(c) feeding the combination of said extract and inert gas through a spray nozzle in a drying tower thereby producing a spray of extract from the nozzle of minimum droplet size and a spray angle of maximum area of coverage when the extract flow rate is at its maximum and a spray of extract from the nozzle of maximum droplet size and a spray pattern having a significantly smaller conical spray angle when the flow rate is at its minimum; and

(d) producing coffee agglomerates when smaller coffee droplets impact larger coffee droplets in the drying tower.

4,368,101

METHOD AND APPARATUS FOR THE PRODUCTION OF A SUSPENSION OF FIBROUS MATERIAL MADE FROM WASTE-PAPER

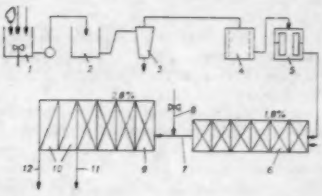
Theodor Bühr, and Lothar Pfalzer, both of Heidenheim, Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany

Filed Nov. 20, 1980, Ser. No. 208,789

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1979, 2947862

Int. Cl.³ D21B *1/32*; B21C *5/02*

U.S. Cl. 162—4 **7 Claims**



1. A method for producing a fibrous suspension from waste-paper, comprising:

dissolving the waste-paper for forming a suspension of waste-paper, cleaning the resulting pulp suspension, stain removal of the cleaned pulp suspension, and flotation of the pulp suspension, said flotation comprising:

floating pulp suspension of a relatively thicker first consistency serially through a first series of flotation cells;

thinning the pulp suspension, by the addition of thinning liquid medium, to a

second thinner consistency thinner than the first consistency, and

floating the now thinner consistency pulp suspension serially through at least one further series of flotation cells.

4. Apparatus for producing a suspension of fibrous material from waste-paper comprising;

means for dissolving the waste-paper into a fibrous pulp suspension, cleaning means for cleaning the fibrous pulp suspension, a stain removal device for the cleaned pulp suspension, and flotation means for following the stain removal device;

the flotation means comprising;

a first series of flotation cells, arranged so that the pulp suspension is serially floated in each cell of the first series for a respective time interval;

two separate series of second flotation cells, and each of the separate series of second flotation cells following and being connected to the end of the first series of flotation cells, whereby the flow of pulp suspension from the first series of cells is divided among the separate series of second flotation cells; each of the second series of flotation cells being arranged so that the pulp suspension is serially floated in each of the cells of each of the second series for a respective time interval;

means for delivering a thinning liquid medium to the pulp suspension between the first and each of the second series of flotation cells for thinning the consistency of the pulp suspension for causing the pulp suspension to have a thin-

ner consistency in each of the second series of cells than in the first series of cells.

4,368,102

APPARATUS FOR REGULATING PULP DENSITY

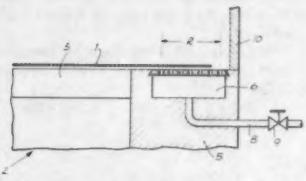
Ernst Schöffmann, and Alexander Czernuch, both of Reutlingen, Fed. Rep. of Germany, assignors to Bruderhaus Maschinen GmbH, Reutlingen, Fed. Rep. of Germany

Filed Nov. 19, 1980, Ser. No. 208,405

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1979, 2946778

Int. Cl.³ D21F *1/08, 1/48*

U.S. Cl. 162—258 4 Claims



1. Apparatus for regulating pulp density in a machine which forms a continuous web from a fibrous suspension, comprising:

a moving screen having lateral edges and moving in a direction through the machine;

dewatering boxes over which the moving screen moves, said dewatering boxes having side walls which contain at least one chamber arranged below at least one lateral edge of the moving screen;

at least one perforated plate arranged between the moving screen and the chamber, said perforated plate forming an upper wall of the chamber and including water discharge openings therethrough, said perforated plate forming an element of a support surface for the moving screen and said perforated plate further being disposed beneath the at least one lateral edge of the moving screen;

at least one water supply line communicating through a bottom wall of said chamber; and

means for regulating the water discharge of said water supply line into said chamber.

4,368,103

COAL CARBONIZATION AND/OR GASIFICATION PLANT

Klaus Weinzierl, Dortmund, and Kurt Tippmer, Recklinghausen, both of Fed. Rep. of Germany, assignors to Vereinigte Elektrizitäts-Werke Westfalen AG and Firma Carl Still GmbH & Co. KG, both of, Fed. Rep. of Germany

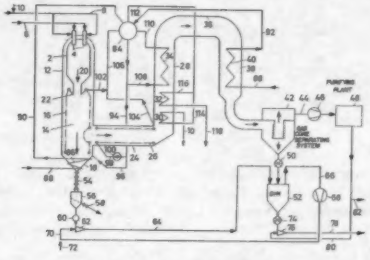
Filed Apr. 28, 1980, Ser. No. 144,017

Claims priority, application Fed. Rep. of Germany, May 10, 1979, 2918859

Int. Cl.³ C10B *49/12;* C10J *3/52, 3/84, 3/86*

U.S. Cl. 202—99 8 Claims

1. In a plant for coal carbonization or gasification, or both, of the type having a vessel with reaction compartment, at least one burner at the top of the reaction compartment for the partial combustion of finely-ground coal at a temperature above the ash-melting temperature to produce a product of gas, and solid components composed of coke dust and slag or ashes, the burner being operable to issue a current of the gas and solid components into the reaction compartment, the compartment having a bottom opening for the discharge of gas-coke dust from the compartment, and means for separating the product gas from the solid components, the improvement comprising said vessel having a lower chamber in said vessel underneath said compartment adjacent to the opening, said vessel having a vertical wall portion with a heating surface surrounding said lower chamber, wherein said heating surface is a radiation heating surface, and a slag trap adapted to trap slag arranged in the bottom of said chamber, an uncooled refractory lining said reaction compartment and wherein said reaction compartment is substantially cylindrical with a height-diameter ratio of 2:1 to 3:1 and at least two burners with oppositely directed spirals are arranged at the top of said reaction compartment, said burners being operative to pass the current of gas and solid components therefrom such that any radial components of the gas-solid current issuing from the burners cancel each other out, said heating surface being a radiation heating surface further comprising deflection means for passing product gas and coke dust from said chamber, said deflection means communicating with said chamber between a



bottom part of said heating surface and said slag trap, a nozzle-shaped outlet member at said bottom opening, and a conical transition between said reaction compartment and the outlet member, having an angle of 20 to 40 degrees, the ratio of the cross-section of said chamber to the cross-section of the reaction compartment outlet ranging from 1.5:1 to 5:1, the ratio of the reaction compartment diameter to the burner outlet diameter ranging from 5-1 to 2-1, said bottom opening having a cross-section dimension of about a quarter to a third of the cross-section of the reaction compartment, and said compartment having a length sufficient to provide a residence time of the gas-solid current of one to two seconds.

4,368,104

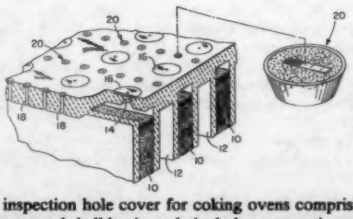
INSPECTION HOLE COVER FOR COKE OVEN

William L. Winter, 10404 S. Highland Rd., Garfield Heights, Ohio 44125

Continuation-in-part of Ser. No. 76,340, Sep. 17, 1979, abandoned. This application Nov. 13, 1980, Ser. No. 206,372

Int. Cl.³ C10B *25/00, 25/24*

U.S. Cl. 202—248 14 Claims



1. An inspection hole cover for coking ovens comprising a bowl-shape metal shell having relatively low magnetic properties, said shell having a base and an annular sidewall tapering outwardly from said base, said shell being open at its upper end, and a high temperature resistant, non-magnetic insulating filler in said shell.

4,368,105

ELECTROLYTIC SOLUTION FOR KARL FISCHER COULOMETRIC TITRATION

Kaname Muroi, Machida, and Hiroko Fujino, Yamato, both of Japan, assignors to Mitsubishi Chemical Industries Limited, Japan

Filed Jan. 21, 1981, Ser. No. 226,732
Claims priority, application Japan, Feb. 12, 1980, 55-15735
Int. Cl.³ G01N 27/44
U.S. Cl. 204—1 T 9 Claims

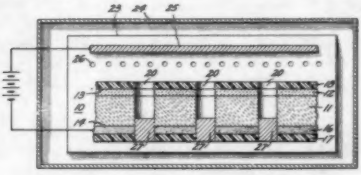
1. An electrolytic solution for Karl Fischer coulometric titration the major proportion being comprised of chloroform and an alkylene carbonate, as solvent, and the remainder being iodine or an iodide, sulfur dioxide, pyridine and a small amount of an alcohol.

4,368,106

IMPLANTATION OF ELECTRICAL FEED-THROUGH CONDUCTORS

Thomas R. Anthony, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 200,770, Oct. 27, 1980, abandoned. This application Jul. 21, 1981, Ser. No. 285,656
Int. Cl.³ C25D 5/02, 7/04
U.S. Cl. 204—15 22 Claims



1. A process for implanting solid, dense, metallic feed-through conductors comprising the steps of:

(a) providing a body, said body having top and bottom major opposed surfaces substantially parallel to each other, an outer peripheral edge area interconnecting said major surfaces, and a plurality of holes therethrough, one of said major surfaces being overlaid by at least a thin film of a conducting metal, said metal being one selected from the group consisting of gold, copper, nickel, chromium, and mixtures and alloys thereof;

(b) positioning said body in a tank parallel to an anode such that said thin film on said major surface faces away from said anode and a space is formed between said body and said anode, the metal of said anode being the same as the metal of said solid, dense, metallic feed-through conductors to be implanted;

(c) surrounding said body and said anode with an electroforming solution, said electroforming solution having therein at least the metal of said solid, dense, metallic feed-through conductors to be implanted;

(d) initiating a flow of bubbles of an inert gas in said space between said body and said anode;

(e) establishing a flow of direct current through said solution, between said anode and said thin film;

(f) forming a solid film bridge of metal across the bottoms of said holes; and

(g) growing solid, dense, metallic implants in said holes from said solid film bridge at the bottoms of said holes to the tops of said holes.

4,368,107

METHOD OF SURFACE TREATMENT OF POROUS MATERIAL

Masatsugu Maejima; Koichi Saruwatari, and Kazuo Inawa, all of Tokyo, Japan, assignors to Fujikura Cable Works, Ltd., Tokyo, Japan

Filed Jun. 11, 1981, Ser. No. 272,658
Claims priority, application Japan, Jun. 16, 1980, 55-81051
Int. Cl.³ C25D 5/00, 5/34, 5/48, 5/50
U.S. Cl. 204—24 32 Claims

1. A method of the surface treatment of a porous material which comprises the step of electrolyzing the porous material in an electrolytic bath composed of an aqueous solution of at least one salt selected from the group consisting of alkali metal thiotungstate, alkali metal thioantimonate, alkali metal thiostannate, alkali metal thiocuprate, alkali metal thioarsenate, alkali metal thioaurate, alkali metal thioplatinate, alkali metal thioniobate, alkali metal thiovanadate, alkaline earth metal thiotungstate, alkaline earth metal thioantimonate, alkaline earth metal thiostannate, alkaline earth metal thiocuprate, alkaline earth metal thioarsenate, alkaline earth metal thioaurate, alkaline earth metal thioplatinate, alkaline earth metal thioniobate, alkaline earth metal thiovanadate, ammonium thiotungstate, ammonium thioantimonate, ammonium thiostannate, ammonium thiocuprate, ammonium thioarsenate, ammonium thioaurate, ammonium thioplatinate, ammonium thioniobate and ammonium thiovanadate, to thereby impregnate the porous material with the metallic sulfide.

4,368,108

PROCESS FOR ELECTROLYTIC RECOVERY OF GALLIUM OR GALLIUM AND VANADIUM FROM ALKALINE LIQUORS RESULTING FROM ALUMINA PRODUCTION

Georgy M. Rubinshtein, ulitsa Uralskaya, 51, kv. 3, Kamensk-Uralsky; Sergei P. Yatsenko, ulitsa Lunacharskogo, 182, kv. 65; Valery N. Diev, ulitsa Malysheva, 135, kv. 6, both of Sverdlovsk; Tatyana M. Zlokazova, ulitsa Musy Dzhalilya, 15, korpus 1, kv. 323, Moscow; Eduard S. Fomin, ulitsa Isetskaya, 7, kv. 12, Kamensk-Uralsky; Ruslan N. Moskov, ulitsa Tsvilinga, 2, kv. 4; Anastasia D. Grigorieva, ulitsa Mirometchikov, 38, kv. 22, both of Sverdlovsk; Ivan V. Davydov, Nalichnaya ulitsa, 40, korpus 2, kv. 148, Leningrad; Evgeny N. Starkov, ulitsa Uralskaya, 51, kv. 4, Kamensk-Uralsky; Vladimir I. Ovsyannikov, ulitsa Belinskogo, 8, kv. 26, Kamensk-Uralsky; Arnold F. Eremeev, ulitsa Stroitelei, 22, kv. 6, Kamensk-Uralsky, and Vladimir N. Lavrenchuk, ulitsa Oktyabrskaya, 75, kv. 6, Kamensk-Uralsky, all of U.S.S.R.

PCT No. PCT/SU79/00033, § 371 Date Jan. 23, 1981, § 102(e) Date Jan. 23, 1981, PCT Pub. No. WO80/02701, PCT Pub. Date Dec. 11, 1980
PCT Filed May 29, 1979, Ser. No. 232,035
Int. Cl.³ C25C 1/24
U.S. Cl. 204—43 R 14 Claims

1. A process for electrolytic recovery of gallium or gallium and vanadium from alkaline liquors resulting from the production of alumina by electrolysis on solid electrodes, comprising introducing a metal into said alkaline liquor in an amount of about 1 to 10 times by weight relative to the weight of gallium in said liquor and then subjecting said alkaline liquor containing said metal to electrolysis at a cathodic current density of from about 200 to 1,000 A/m.², a voltage of from about 3.4 to 4.5 V, and a temperature of from about 28° to 37° C., wherein the metal preliminarily introduced into the alkaline liquor is effective to form upon electrolysis of said alkaline liquor, an alloy with gallium which is not passivated under the conditions of electrolysis.

4,368,109

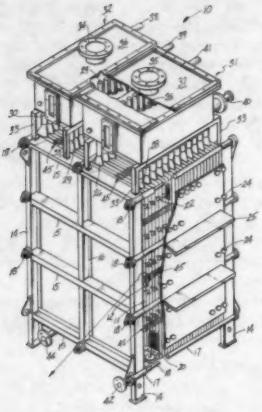
ELECTROLYTIC CELL WITH INTER-ELECTRODE SPACER MEANS

James M. Ford, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 204,127, Nov. 5, 1980. This application Jan. 2, 1981, Ser. No. 222,096

Int. Cl.³ C25B 9/00, 11/00, 13/08

U.S. Cl. 204—253 **22 Claims**



1. In an electrolytic cell having a plurality of adjacently positioned electrodes in which electrolyte fluid is contained comprising at least:

(a) a first frame having a first generally planar side and an opposing second generally planar side to which are respectively connected a first generally planar electrode face and a second generally planar electrode face, at least the opposing second side defining a first plane, the first side and opposing second side further being connected by a first end portion defining the exterior of the first frame;

(b) a second frame having a first generally planar side and an opposing second generally planar side to which are respectively connected a third generally planar electrode face and a fourth generally planar electrode face, at least the first side defining a second plane adjacent the first plane and being generally parallel thereto, the first side and opposing second side further being connected to a second end portion defining the exterior of the second frame;

(c) separator means for separating the first frame from the second frame having a first surface adjacent the second electrode face and an opposing second surface adjacent the third electrode face;

(d) first sealing means contacting the second side of the first frame and the first surface of the separator means, the first sealing means having a contactable surface of a first predetermined surface area in contact with the separator means;

(e) second sealing means contacting the first side of the second frame and the second surface of the separator means having a first contactable surface with a first predetermined surface area adjacent the first side of the second frame and a second contactable surface with a second predetermined surface area contacting the separator means, the second predetermined surface area being less than the first predetermined surface area of the first sealing means;

(f) at least a first outrigger block fastened to the exterior of the first frame and at least a second outrigger block fastened to the exterior of the second frame;

(g) spacer means of predetermined thickness positioned against and retained by the at least first and second outrigger blocks between the first plane and the second plane removably connected to the first frame and the second frame thereby defining a uniform gap equal to the predetermined thickness of the spacer means; and

(h) clamping means for pressing the frames together against the sealing means and the separator means so that the first frame is separated from the second frame by a distance that is no less than the uniform gap to form a substantially fluid-tight seal between the frames.

4,368,110

SUBSTITUTED COBALT OXIDE SPINELS

Donald L. Caldwell, and Mark J. Hazelrigg, Jr., both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 25, 1981, Ser. No. 247,430

Int. Cl.³ C25B 11/06

U.S. Cl. 204—290 F **10 Claims**

1. An electrically-conductive composite comprising an electrically-conductive substrate having, on at least a portion thereof, a conductive spinel coating, said coating comprising

a metal cation substituted cobalt oxide spinel structure conforming substantially to the empirical formula $M_xZ_yCo_{3-(x+y)}O_4$,

where M represents at least one metal of the Groups consisting of IB, IIA, and IIB of the Periodic Table,

where Z represents at least one other metal of the Groups consisting of IB, IIA, and IIB of the periodic table,

where x is an integer greater than zero, but less than 1,

where y is an integer greater than zero, but less than 1,

where the sum of x and y is greater than zero, but not greater than 1,

and where the amounts of M, Z, and Co are sufficient to substantially satisfy the valence requirements of oxygen in the spinel structure.

4,368,111

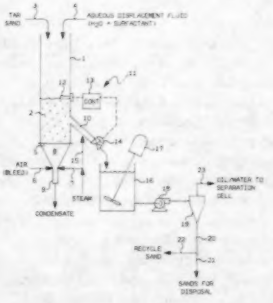
OIL RECOVERY FROM TAR SANDS

James M. Siefkin, and Dwight D. Boesiger, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 17, 1980, Ser. No. 217,350

Int. Cl.³ C10G 1/04

U.S. Cl. 208—11 LE **4 Claims**



1. A process for the extraction and recovery of oil from oil wet tar sands comprising:

(a) introducing an oil wet tar sand, a surfactant, said surfactant being an inorganic polymeric complex having the general structural formula—$[M'M''(NH—H)_xM'')]_n$ wherein M' represents an alkali metal, M'' represents one or more non-alkaline metals of Group I–VIII of the Periodic Table, x represents the total valence of M' and M'' and n represents the numbers of repeating units in the inorganic polymeric complex, and a fluid selected from

the group consisting of at least one of water, steam, air or mixtures thereof into a fluidization zone;

(b) introducing at least one of air, steam or a combination thereof into said fluidization zone so as to establish vigorous fluidization conditions in said fluidization zone thereby forming a multiphase mixture therein comprising a solid phase consisting essentially of sand particles, at least one liquid phase which is one of oil or water, and an oil containing froth phase;

(c) withdrawing said multiphase mixture from said fluidization zone;

(d) introducing said multiphase mixture into a separation zone wherein said multiphase mixture is separated into a sand phase and an oil containing liquid phase;

(e) separating said oil containing liquid phase into an oil phase and an aqueous phase; and

(f) recovering said oil phase as a product of the process.

4,368,112

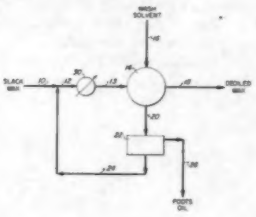
SOLVENT RECOVERY FROM FOOTS OIL USING MODIFIED REGENERATED CELLULOSE MEMBRANES

John A. Thompson, Wyoming; David H. Shaw, Camlachie, both of Canada, and David A. Gudelis, Chatham, N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 109,300, Jan. 4, 1980, abandoned, which is a continuation-in-part of Ser. No. 973,967, Dec. 28, 1978, abandoned. This application May 13, 1981, Ser. No. 263,115

Int. Cl.³ C10G *73/08*

U.S. Cl. 208—31 **25 Claims**



1. A process comprising:

(a) warming up a mixture of foots oil containing slack wax and solvent to dissolve at least a portion of the foots oil to form a slurry comprising solid particles of wax and a solution of foots oil and solvent;

(b) passing said warm slurry to solid-liquid separation means to separate the solid particles of wax from the foots oil solution; and

(c) contacting at least a portion of said foots oil solution, under pressure, with one side of at least one semi-permeable membrane made from regenerated cellulose film to form a permeate richer in said solvent than said mixture and a retentate leaner in said solvent than said solvent than said mixture, wherein said semipermeable membrane is prepared from a water-containing hydrophilic regenerated cellulose membrane by sequentially permeating through said water-containing membrane, under a differential pressure across the membrane, a series of solvents of decreasing polarity wherein adjacent solvents in the series exhibit bulk liquid-liquid miscibility with each other and wherein the last solvent exhibits bulk liquid-liquid miscibility with the dewaxing solvent to be permeated through the membrane.

4,368,113

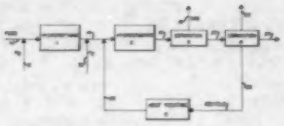
HYDROCARBON HYDROCRACKING PROCESS

William E. Winter; Mafer E. Tunison, and David W. Stauba, all of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Aug. 31, 1981, Ser. No. 297,721

Int. Cl.³ C10G *45/02, 69/00*

U.S. Cl. 208—89 **9 Claims**



1. In a hydrocracking process wherein a heavy hydrocarbonaceous feed is contacted with an added hydrogen-containing gas in the presence of a hydrocracking catalyst at hydrocracking conditions in a hydrocracking zone to produce a hydrocracked oil product, separating from said hydrocracked oil product a heavy hydrocarbonaceous bottoms fraction and recycling at least a portion of said heavy hydrocarbonaceous bottoms fraction to said hydrocracking zone, the improvement which comprises: prior to said recycling step, heat-treating said portion of said heavy hydrocarbonaceous bottoms fraction in a heat-treating zone in the absence of added hydrogen and in the absence of a catalyst at conditions below which significant cracking of said portion of bottoms fraction occurs, said conditions including a temperature in the range of about 500° to about 720° F., for a period of time of at least 0.25 hour.

4,368,114

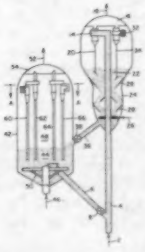
OCTANE AND TOTAL YIELD IMPROVEMENT IN CATALYTIC CRACKING

Arthur W. Chester, Cherry Hill; William E. Cormier, Jr., Clarksboro, and William A. Stover, Woodbury, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 100,585, Dec. 5, 1979, Pat. No. 4,309,279, which is a continuation-in-part of Ser. No. 50,588, Jun. 1, 1979, abandoned. This application Sep. 14, 1981, Ser. No. 301,851

Int. Cl.³ C10G *11/05*

U.S. Cl. 208—120 **16 Claims**



1. In a process for catalytic cracking of petroleum fractions in the presence of a conventional cracking catalyst comprising at least about 5 weight percent of a catalytically active component and under cracking conditions, the improvement wherein separate additive catalyst comprising a zeolite characterized by a Constraint Index of from about 1 to about 12 and a silica to alumina mole ratio greater than about 12 is added to said conventional cracking catalyst in the cracking process in an amount which provides the zeolite component of said separate additive catalyst at from about 0.01 weight percent to about 1.0 weight percent of the conventional cracking catalyst in the cracking process.

4,368,115

CATALYSTS COMPRISING LAYERED CHALCOGENIDES OF GROUP IVB-GROUP VIIB PREPARED BY A LOW TEMPERATURE NONAQUEOUS PRECIPITATE TECHNIQUE

Russell R. Chianelli, North Branch; Theresa A. Pecoraro, Middletown, both of N.J., and Martin B. Dines, Santa Ana, Calif., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 973,715, Dec. 26, 1978, abandoned, which is a continuation of Ser. No. 797,012, May 16, 1977, abandoned. This application Mar. 11, 1981, Ser. No. 242,640

Int. Cl.³ C10G *45/08*

U.S. Cl. 208—215 **85 Claims**

1. In a process for the hydrodesulfurization of hydrocarbon feed streams wherein said hydrocarbon feedstreams are contacted with a catalyst at a temperature and pressure and in the presence of hydrogen or a hydrogen donor solvent and under conditions sufficient to effect the hydrodesulfurization of the hydrocarbon feedstream, the improvement comprising using as the catalyst a layered material of the formula MX_y wherein M is a transition metal selected from the groups consisting of Group IVb, Vb, VIb, VIIb metals, X is a chalcogen selected from the group consisting of sulfur, selenium, tellurium and mixtures thereof and y is a number ranging from about 1.5 to about 3 which material is prepared by reacting neat a Group IVb to VIIb metal salt, with a source of sulfide, selenide, or telluride ions, said source being selected from the group consisting of Li_2X, Na_2X, K_2X, NaHX, LiHX, KHX, $(NH_4)HX$, $(NH_4)_2X$, $(RNH_3)_2X$, $(RR'NH_2)_2X$, $(RR'R''NH)_2X$ wherein R, R' and R'' are the same or different C_1–C_{20} alkyl group and C_6–C_{20} aryl group, and X is the chalcogen selected from the group consisting of sulfur, selenium, tellurium and mixtures thereof, said reaction being conducted at a temperature of from −78 ° to 400° C. for a time sufficient for reaction to occur.

4,368,116

POLYHYDROXY FATTY ACIDS COLLECTOR-FROTHERS

Vojislav Petrovich, 1935 W. Schiller St., Chicago, Ill. 60622

Filed Mar. 9, 1981, Ser. No. 241,560

Int. Cl.³ B03D *1/14*

U.S. Cl. 209—166 **1 Claim**

1. In concentrating by froth flotation of metallic ores selected from the group of oxide ores mixed with gangue minerals selected from the group of silica, silicates, and the like acid minerals which includes the subjecting of said ore material when finely ground to froth flotation process; the step of adding to the mineral slurry an amount of the order of 0.1 kg to 0.5 kg per ton of ore treated potassium salts of polyhydroxy fatty acids; said polyhydroxy fatty acids selected from the class consisting of 2 to 4 hydroxyl groups designated as: dihydroxystearic acid, trihydroxystearic acid, tetrahydroxystearic acid, dihydroxyoleic acid, tetrahydroxyoleic acid; said acids are applied in froth flotation process as potassium salts; being collector-frothers said potassium salts of said polyhydroxy fatty acids exhibit coarse-grain flotation of oxide minerals augmenting the non-responsiveness of gangue minerals, thus producing high grade concentrates of responsive metallic oxide minerals.

4,368,117

PROCESS FOR THE SELECTIVE FROTH-FLOTATION OF SULFIDIC, OXIDIC AND SALT-TYPE MINERALS

Väinö V. H. Hintikka, Vanha Ulvila, Finland, assignor to Outokumpu Oy, Helsinki, Finland

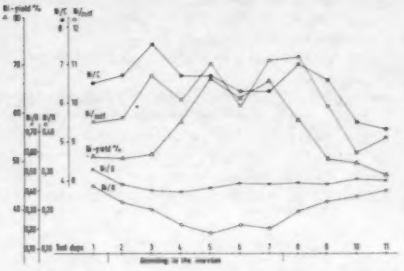
Continuation of Ser. No. 49,908, Jun. 19, 1979, abandoned. This application Feb. 18, 1981, Ser. No. 235,610

Claims priority, application Finland, Jun. 22, 1978, 781017

Int. Cl.³ B03D *1/14*

U.S. Cl. 209—167 **5 Claims**

1. A process for the selective froth-flotation of sulfidic minerals from silicate minerals with an anionic collector agent, comprising first wet-grinding the minerals to flotation fineness to obtain a slurry of the minerals; and then conditioning and froth-flotating the slurry in acidic conditions by using as the anionic collector a xanthate or thiophosphate, and comprising using in addition to the anionic collector agent at least one additional chemical selected from the group comprising ethoxylated alklyl phenols, ethoxylated alkyl amines, ethoxylated carboxyclic acids and ethoxylated fatty alcohols, said ethoxylated compounds being longer chained than hexyl ethoxylates, to passivate active silicate mineral surfaces or weaken the hydrophobia of undesirable minerals to which the collector agent has already adhered.



4,368,118

BLOOD-AIR SEPARATOR AND FILTER

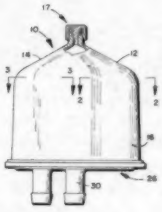
George G. Siposs, 2855 Velasco Lane, Costa Mesa, Calif. 92626

Continuation-in-part of Ser. No. 109,801, Jan. 7, 1980, Pat. No. 4,344,777. This application Sep. 15, 1980, Ser. No. 186,976

The portion of the term of this patent subsequent to Aug. 17, 1999, has been disclaimed.

Int. Cl.³ B01D *19/00*

U.S. Cl. 210—136 **27 Claims**



1. An arterial block-gas separator and filter comprising:

a hollow body, said hollow body having an inlet and an outlet;

a stationary upwardly divergent flow control member within said body and connected to receive flow through said inlet for causing a reduction in flow velocity as the arterial blood flows upward in said upwardly divergent flow control member to fill said hollow body with arterial blood to a level above said upwardly divergent flow control member;

blood flow direction control means above said divergent flow control member comprising spirally and circumferentially directed vanes for receiving arterial blood therefrom and to radially and circumferentially direct arterial blood flow within the arterial blood substantially filling said body;

a chamber within said body above said blood flow direction control means to receive gas separated from the blood flow;

a blood filter member having an inlet side and an outlet side, said blood filter member being positioned within said hollow body so that its inlet side is towards said chamber and its inlet side receives blood which has already passed through said blood flow direction control means; and

an outlet from said body below said flow direction control means to receive blood from the outlet side of said filter and to discharge arterial blood with reduced gas content from said separator.

4,368,119

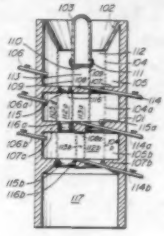
APPARATUS FOR CONTINUOUS TREATMENT OF MIXTURES

Gerald E. Wilson, London, Canada, assignor to Carpools Environmental Protection Services Limited, London, Canada

Filed Feb. 19, 1981, Ser. No. 235,825

Int. Cl.³ B01D 29/36

U.S. Cl. 210—137 **12 Claims**



1. Apparatus for continuous treatment of a mixture comprising a fluid component and a solid particulate component, wherein a portion of the fluid component is to be separated from the particulate component by subjecting said mixture to a filtering effect, said apparatus comprising, in combination:

(a) a generally tubular housing having an inlet end portion and an outlet end portion for inlet and discharge, respectively, of said mixture;

(b) inner core means generally coaxial with and disposed centrally of said housing and defining within said housing a generally annular space axially aligned within said inlet and outlet end portions;

(c) a fluid permeable first outer core means generally axial with said housing and subdividing said generally annular space into a generally annular passage adjacent to said inner core means, and an annular chamber disposed between said outer core means and said housing and remote from said inner core means;

(d) said inner core means comprising a solid core portion generally impermeable by the fluid, and a permeable core portion defining a central chamber coextensive with and disposed downstream of said solid core portion, said solid core portion being disposed at said inlet end portion and including a convexly rounded tip section at an upstream end thereof;

(e) first filtrate discharge means adapted to selectively communicate said central chamber with the exterior of said housing;

(f) first partition means disposed at a downstream end of the central chamber and forming an end wall thereof, and second partition means disposed at a downstream end of said generally annular chamber;

(g) inlet deflector means at the inlet end portion and arranged to direct an incoming flow of the mixture to be directed into said annular passage and towards the solid core portion; and

(h) throttling means near said outlet end portion for controlling the speed of flow of said mixture through said annular passage by selectively controlling the cross-sectional area thereof at the outlet end portion.

4,368,120

EFFLUENT TREATMENT SYSTEM

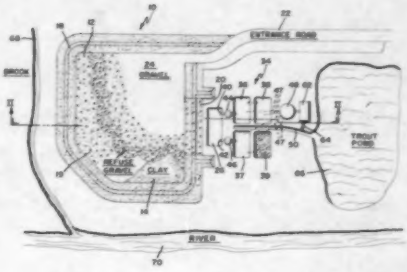
Leonard P. Martone, Worcester Rd., Barre, Mass. 01005, and Ronald L. Lavigne, Petersham, Mass., assignors to Leonard P. Martone, Barre, Mass.

Division of Ser. No. 108,418, Dec. 31, 1979, Pat. No. 4,276,164, which is a continuation of Ser. No. 936,824, Aug. 25, 1978, abandoned. This application Feb. 9, 1981, Ser. No. 233,024

The portion of the term of this patent subsequent to Jun. 30, 1998, has been disclaimed.

Int. Cl.³ C02F 9/00

U.S. Cl. 210—170 **7 Claims**



1. System for treating leachate effluent from refuse, comprising:

(a) a refuse basin for the reception of refuse material,

(b) a layer of substantially water-impervious material covering the inside contours of the basin,

(c) a water-impervious catch basin adjacent the refuse basin and located at a lower level than the refuse basin,

(d) means forming part of said refuse basin for allowing leachate to drain from the refuse basin to the catch basin, the means for allowing leachate to drain from the refuse basin to the catch basin including a dike along one side of the refuse basin in direct contact with the refuse in the basin and flow means joining the dike to the catch basin,

(e) water impervious first and second lagoons for effecting a treatment of refuse leachate,

(f) flow control means for selectively conveying leachate accumulated in said catch basin to said first and second lagoons, whereby a quantity of leachate may be treated in one of said lagoons while leachate is being conveyed to the other of said lagoons, and

(g) flow control means for transferring treated leachate from each lagoon to a disposal area, wherein the layers for the refuse basin, the catch basin, and the lagoons consist of an earthen material containing a substantial amount of clay.

4,368,121

DAM SPILLWAY

Jury N. Vasiliev, ploschad Vosstania, 1, kv. 60, and Evgeny P. Gladkov, 2 Sinichkina ulitsa, 22, kv. 1, both of Moscow, U.S.S.R.

Filed Feb. 10, 1981, Ser. No. 233,198

Claims priority, application U.S.S.R., Jul. 9, 1979, 2792944

Int. Cl.³ C02F 1/24

U.S. Cl. 210—170 **4 Claims**

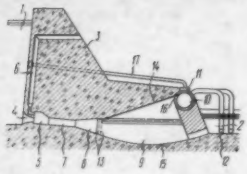
1. A dam spillway comprising:

a forebay and an afterbay for receiving water from said forebay;

a means for compressing the atmospheric air by the passing water which includes ports for the inlet of water, a forechamber communicating with the atmosphere via air conduits, a mixing chamber and a diffuser; and

a floatation chamber connected to said means for compressing the atmospheric air by the passing water which in-

cludes a froth separating cavity in said floatation chamber, inlet and outlet portions of said froth separating cavity, said inlet portion being connected to said means for compressing the atmospheric air by the passing water, a lower wall of said froth separating cavity having the contour of a smooth concave curve; a froth remover in said floatation chamber arranged in the upper portion of said froth separating cavity and placed substantially above the water



level in said afterbay in the form of a tubular member having a longitudinal slot therein facing the interior of said froth separating cavity; an assembly of water sprinkling froth suppressing sprayers in said floatation chamber fluidly communicating with said forebay and secured on said froth remover; perforated air ducts in said floatation chamber arranged in said afterbay and connected to the upper portion of said froth remover adjacent to said sprayer assembly.

4,368,122

SYSTEM FOR SEPARATING AND COLLECTING OILY MATERIALS FROM WATER EXPANSES

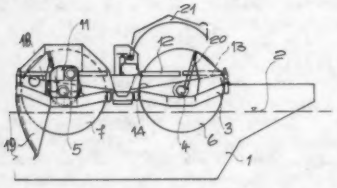
Giancarlo Ravagnan, Via Euganea, 33, Padova, Italy

Filed Sep. 30, 1980, Ser. No. 192,567

Claims priority, application Italy, Oct. 11, 1979, 41621 A/79

Int. Cl.³ E02B *15/04*

U.S. Cl. 210—242.3 **10 Claims**



1. A system for separating and collecting oily materials from water expanses, including a frame, at least one axis of rotation supported on said frame, a plurality of rotatory disks arranged side by side on said at least one axis of rotation, said disks being adapted for operation partially immersed in the water and having each at least one pair of wiper members set to work in a controllable manner, at least one of said wiper members acting to recover the material adhered to a respective disk, means being further provided for adjusting the relative working positions of said axes of rotation, and wherein according to the improvement the system further comprises a controlling mechanism for opening and closing said wiper members with respect to the respective disk member thereby to alternatively clear said wiper members away from the disk surface and alternatively press said wiper members against said disk surface, said controlling mechanism comprising a power cylinder assembly and a transmission mechanism for transmitting the motion generated by said power cylinder assembly to said wiper members and cause selectively the opening and closing thereof, with respect to said disk surface, said transmission mechanism comprising for each wiper member a pivot pin supported on said frame and extending parallel to the respective disk member, and a lever mechanism connected to said pivot pin for imparting an angular rotation to said pivot pin thereby to selectively press said wiper members against said disk surface and respectively clear away said wiper member from said disk surface.

4,368,123

REGENERATIVE COUNTER TOP WATER CONDITIONER

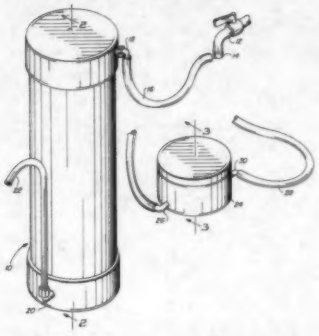
Bedford F. Stanley, 4901 E. Sunrise Dr., No. 1614, Tucson, Ariz. 85718

Filed Aug. 31, 1981, Ser. No. 298,231

The portion of the term of this patent subsequent to Sep. 1, 1998, has been disclaimed.

Int. Cl.³ C02F *1/42*

U.S. Cl. 210—269 **5 Claims**



1. A regenerative portable water conditioner for counter top use, said water conditioner comprising in combination:

(a) a container having an inlet pipe for receiving water to be conditioned, a pressure reducing nozzle connectable to a conventional faucet and flexible tubing interconnecting said nozzle with said inlet pipe and a discharge pipe for discharging conditioned water; and a spigot for directly discharging the conditioned water into a vessel for immediate use;

(b) an inlet compartment for receiving water from said inlet pipe, said inlet compartment being defined by a top cap;

(c) a first compartment downstream of said inlet compartment, said first compartment including a quantity of activated charcoal;

(d) filter means disposed intermediate said top cap and said first compartment for filtering the water flowing into said first compartment;

(e) a second compartment downstream of said first compartment;

(f) a cylinder for defining the walls of said first and second compartments, said cylinder having one end sealingly connected to said top cap;

(g) a quantity of regenerative anion exchange resins and a quantity of regenerative cation exchange resins disposed within said second compartment for softening and dealkalizing the water flowing through said second compartment;

(h) first screen means for segregating said first and second compartments;

(i) an outlet compartment for receiving the water from said second compartment and directing the water to said discharge pipe said outlet compartment being defined by a bottom cap sealingly connected to another end of said cylinder; and

(j) second screen means for segregating said second compartment from said outlet compartment.

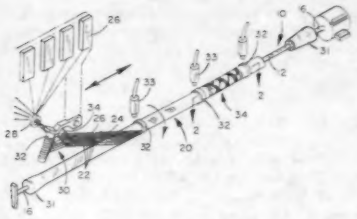
4,368,124
METHOD OF WINDING A MASS TRANSFER DEVICE AND PRODUCT

Robert C. Brumfield, P.O. Dr. CC, 42 Lakeshore Ter., Incline Village, Nev. 89450

Continuation-in-part of Ser. No. 28,238, Apr. 9, 1979, abandoned, and a continuation-in-part of Ser. No. 117,207, Jan. 31, 1980, abandoned. This application Jan. 2, 1981, Ser. No. 221,999

Int. Cl.³ B01D *13/04*; B65H *81/00*

U.S. Cl. 210—321.3 16 Claims



1. In a dialysis cartridge made by winding hollow groups of one or more parallel tubular fiber membranes onto a mandrel in a criss-cross pattern, the improvement comprising at least one relatively stiff, generally solid fiber positioned to lie in said winding alongside with, and generally parallel to, each said group of hollow fibers without being twisted therewith, said generally solid fiber is at least 80 percent as thick as said hollow fiber such that said hollow fibers lie without substantial pinching.

6. The method of supporting and spacing easily deformable semipermeable filaments wound on a mandrel in a criss-cross pattern to form a mass transfer device, comprising the step of concurrently winding onto said mandrel, parallel to each other in a plane generally tangential to said mandrel, and without twisting them together, at least one of said easily deformable filaments and at least one relatively stiff filament; said relatively stiff filament is at least 80 percent as thick as said semipermeable filament such that said semipermeable filaments lie without substantial pinching.

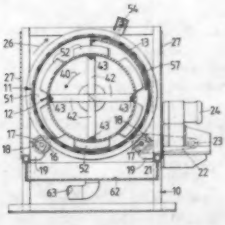
4,368,125
APPARATUS FOR EXTRACTING LIQUID FROM A SUSPENSION

James D. Murray, Birmingham, Ala., assignor to Passavant-Werke AG & Co. KG, Fed. Rep. of Germany

Filed Aug. 3, 1981, Ser. No. 289,805

Int. Cl.³ B01D *33/06*

U.S. Cl. 210—403 11 Claims



1. Apparatus for extracting liquid from a suspension comprising:

(a) a filter media covered concentrator drum mounted for rotation about a generally horizontal axis,

(b) an inner drum mounted for rotation about a horizontal axis within and in spaced relation to the inner surface of said concentrator drum and defining a suspension transition chamber therebetween,

(c) means for rotating said concentrator drum and said inner drum in opposite directions,

(d) means for introducing said suspension into said concentrator drum at one end of said transition chamber,

(e) angularly disposed vanes carried by the outer surface of said inner drum in position to convey said suspension from said one end of said transition chamber to the other end thereof and concomitantly turn and lift said suspension to an elevation spaced below the top of said transition chamber so that said suspension reaches a maximum elevation and falls back before reaching said top of said transition chamber to increase the surface area of said suspension exposed to said filter media and provide a minimum barrier of solids previously separated from liquid,

(f) means for cleaning said filter media while it is moving at an elevation above said maximum elevation of said suspension in said transition chamber, and

(g) means for discharging said suspension adjacent said other end of said transition chamber.

4,368,126
METHOD OF REMOVING MOISTURE FROM HYDRAULIC SYSTEMS

Constandi A. Audeh, Princeton, N.J., and Joseph J. Dickert, Jr., Yardley, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 32,078, Apr. 23, 1979, abandoned. This application Dec. 15, 1980, Ser. No. 216,120

Int. Cl.³ B01D *15/00*

U.S. Cl. 210—663 7 Claims

1. A method for effecting the removal of moisture and water from a closed hydraulic system wherein said system contains a master and a slave cylinder and is normally susceptible to corrosion in the presence of water comprising contacting the hydraulic fluid therein with a dessicant placed in the reservoir and at locations in the lines between said master and slave cylinders so as to provide contact between hydraulic fluid and dessicant whereby substantially all of said water contained therein is removed.

4,368,127
FABRIC SOFTENING COMPOUNDS AND METHOD

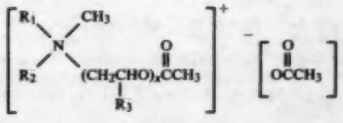
James M. Richmond, Naperville, Ill., assignor to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 54,341, Jul. 2, 1979. This application Jun. 30, 1980, Ser. No. 164,705

Int. Cl.³ D06M *13/46*

U.S. Cl. 252—8.8 5 Claims

1. A method for softening textiles comprising contacting said textiles with an effective amount of a compound of the formula



wherein R_1 and R_2 are independently selected from the group consisting of alkyl and alkenyl groups containing from about 8 to about 22 carbon atoms, R_3 is selected from the group consisting of hydrogen and methyl, and x is an integer from 1 to about 20.

4,368,128

TRICYCLIC ALCOHOLS, ETHERS AND ESTERS, PROCESS FOR PREPARING SAME AND USE THEREOF IN AUGMENTING OR ENHANCING THE ORGANOLEPTIC PROPERTIES OF CONSUMABLE MATERIALS

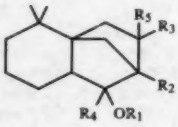
Kenneth K. Light, North Ogden, Utah; Joseph A. McGhie, Montclair, N.J.; Futoshi Fujioka, Wanamassa, N.J., and Takao Yoshida, West Long Branch, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 206,649, Nov. 13, 1980. This application Oct. 13, 1981, Ser. No. 311,141

Int. Cl.³ D06M *13/18, 13/20*

U.S. Cl. 252—8.9 1 Claim

1. A process for augmenting or enhancing the aroma of a perfumed article selected from the group consisting of a solid or liquid anionic, cationic, nonionic or zwitterionic detergents; fabric softener compositions and fabric softener articles comprising the step of adding to a solid or liquid anionic, cationic, nonionic or zwitterionic detergent base, a fabric softener composition or a component of a fabric softener article an aroma augmenting or enhancing quantity of at least one tricyclic compound having the structure:



wherein R_1 represents hydrogen, methyl or acetyl and wherein R_2, R_3, R_4 and R_5 are the same or different and each represent hydrogen, methyl or ethyl.

4,368,129

MULTIFUNCTIONAL LUBRICANT ADDITIVES AND COMPOSITIONS THEREOF

Andrew G. Horodysky, Cherry Hill, and Joan M. Kaminski, Clementon, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 30, 1981, Ser. No. 259,217

Int. Cl.³ C10M *1/46;* C07F *5/02, 9/02*

U.S. Cl. 252—32.7 E 15 Claims

1. A lubricant composition comprising a major proportion of an oil of lubricating viscosity or grease or other solid lubricant prepared therefrom and a minor effective amount of a multifunctional additive consisting of the metal salt of a partially borated, partially phosphosulfurized hydroxyl-containing ester derived from a polyol.

4,368,130

PROCESS OF PREPARING GREASE COMPOSITION

James T. Gragson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 30,965, Apr. 17, 1979, Pat. No. 4,261,840. This application Oct. 20, 1980, Ser. No. 198,518

Int. Cl.³ C10M *1/40*

U.S. Cl. 252—33.4 9 Claims

1. Process for preparing a grease composition comprising:

(a) preparing a mixture of:

(aa) an alkaline earth metal petroleum sulfonate obtained from an oil base stock having a viscosity in the range of 180 to 230 SUS at 99° C. and a viscosity index of at least 85,

(bb) an alkaline earth metal oxide or hydroxide,

(cc) an alcohol,

(dd) a lower molecular weight sulfonic acid derivative selected from the group consisting of:

derivatives corresponding to the formula RSO_3M, where M is hydrogen, ammonium, or an alkali metal and R is phenyl or alkyl substituted phenyl, said alkyl having 1 to 24 carbon atoms, and

alkali metal and ammonium salts of a petroleum sulfonic acid having an average number of carbon atoms of 6 to 30,

(ee) a lubricating oil, and

(ff) with the further proviso that the lower molecular weight sulfonic acid derivative is employed in a quantity in the range of 2 to 25 parts by weight based on 100 parts by weight of the alkaline earth metal petroleum sulfonate, and

(b) contacting the mixture with carbon dioxide optionally in the presence of a solvent

(c) removing said alcohol, solvent when employed and any water from the mixture and recovering said grease composition.

4,368,131

COMPOSITION FOR USE IN A MAGNETICALLY FLUIDIZED BED

Ronald E. Rosenweig, Summit, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 943,384, Sep. 18, 1978, abandoned. This application Dec. 19, 1980, Ser. No. 218,087

Int. Cl.³ B01J *21/04, 35/02*

U.S. Cl. 252—62.55 11 Claims

1. As a composition of matter, a particulate material which can be oriented within, and formed into a magnetically stabilized fluidized bed to provide high magnetization at a low applied field which comprises particles of geometrically elongate shape which have a major axis at least 1.2 times the length of the minor axis, the particles being of average diameter (minor axis) ranging from about 10 μm to about 4000 μm and contain a nonferromagnetic component, composited with a single elongated ferromagnetic component, the ferromagnetic component being multidomain, having dimensions of at least 1 μm in all directions, and having a length:diameter (L/D) ratio of at least 2 but not more than 17.3, the nonferromagnetic component, being comprised of alumina within which the ferromagnetic component is dispersed as an inclusion within the interior of the composite particles and aligned with the major axis of said particles, the ferromagnetic component constituting at least 0.5%, but not more than $3/2(L/D)^2$, of the total volume of each particle, where the L/D ratio is the ratio of the longest dimension of the ferromagnetic component relative to the shortest dimension, and the particles can, in said magnetically stabilized fluidized bed rotate, or turn to line up the long dimesion of the ferromagnetic component parallel to the direction of the field and a short dimension perpendicular to the direction of the field, wherein a catalytically effective amount of a catalytically active metal is dispersed on the surface of the composite particles and the composite particles are catalytically active.

4,368,132

COMPOSITION FOR USE IN A MAGNETICALLY FLUIDIZED BED

Robert L. Seiver, Baton Rouge, La., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 943,552, Sep. 18, 1978, abandoned. This application Dec. 19, 1980, Ser. No. 218,088

Int. Cl.³ B01J *21/00, 23/00, 35/02*

U.S. Cl. 252—62.55 9 Claims

1. As a composition of matter, particulate material which can be oriented within, and formed into a magnetically stabilized fluidized bed to provide an effective demagnetization coefficient of from about 0.0027 to about 0.174, which comprises particles containing a non-ferromagnetic refractory, porous inorganic oxide component composited with a single elongated ferromagnetic component, the ferromagnetic component being multidomain, having dimensions of at least 1 μm in all directions and a length:diameter (L/D) ratio of at least 2

but not more than 17.3, said ferromagnetic component being present in the composite particles as an inclusion within a matrix formed by said nonferromagnetic component, and constituting at least 0.5%, but not more than $3/2(L/D)^2$ of the total volume of each particle, where L/D is the ratio of the longest dimension of the ferromagnetic component relative to the shortest dimension, and the particles can, in said magnetically stabilized fluidized bed rotate, or turn to line up the long dimension of a ferromagnetic component parallel to the direction of the field and a short dimension perpendicular to the direction of the field, wherein a catalytically effective amount of a catalytically active metal is dispersed on the surface of the composite particles, and the composite particles are catalytically active.

4,368,133

AQUEOUS SYSTEMS CONTAINING NITROGEN-CONTAINING, PHOSPHOROUS-FREE CARBOXYLIC SOLUBILIZER/SURFACTANT ADDITIVES

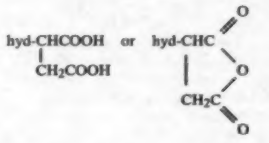
John W. Forsberg, Mentor-on-the-Lake, Ohio, assignor to The Lubrizol Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 26,384, Apr. 2, 1979, abandoned, which is a continuation-in-part of Ser. No. 948,460, Oct. 4, 1978, abandoned, which is a continuation-in-part of Ser. No. 946,294, Sep. 27, 1978, abandoned. This application Feb. 25, 1981, Ser. No. 238,394

Int. Cl.³ C10M *1/08, 1/06, 3/04*

U.S. Cl. 252—75 **38 Claims**

1. A composition comprising a continuous aqueous phase and the combination of (A) at least one nitrogen-containing, phosphorous-free carboxylic solubilizer and (B) at least one surfactant in said aqueous phase, said solubilizer (A) being made by the reaction of (A)(I) at least one acylating agent represented by the formula:



wherein hyd is a hydrocarbon-based substituent of about 30 to about 500 carbon atoms with (A)(II) at least one (a) N-(hydroxyl-substituted hydrocarbyl) amine, (b) hydroxyl-substituted poly(hydrocarbyloxy) analog of said amine or (c) mixtures of (a) and (b), the ratio of components (A)(II) to (A)(I) being in the range of about 0.5 to about 3 moles of component (A)(II) per equivalent of component (A)(I).

4,368,134

METHOD FOR RETARDING GELATION OF BICARBONATE-CARBONATE-ZEOLITE-SILICATE CRUTCHER SLURRIES

James A. Kaeser, Somerset, N.J., assignor to Colgate Palmolive Company, New York, N.Y.

Continuation of Ser. No. 157,568, Jun. 9, 1980, abandoned, which is a continuation-in-part of Ser. No. 128,574, Mar. 10, 1980, Pat. No. 4,294,718. This application Feb. 13, 1981, Ser. No. 234,564

Int. Cl.³ C11D *3/04, 3/12, 11/02, 17/06*

U.S. Cl. 252—140 **21 Claims**

1. A method of retarding or preventing gelation of a miscible and pumpable crutcher slurry containing from about 40 to 70% of solids and 60 to 30% of water, of which solids content, on a 100% solids basis, about 20 to 45% is sodium bicarbonate, about 10 to 30% is sodium carbonate, about 5 to 25% is sodium silicate of $Na_2O:SiO_2$ ratio within the range of 1:1.4 to 1:3, and about 10 to 65% is zeolite, with the ratio of sodium bicarbonate:sodium carbonate being within the range of about 1:1 to 4:1, the ratio of sodium carbonate:sodium silicate being within the range of about 1:2.5 to 5:1, the ratio of sodium bicarbonate:sodium silicate being within the range of about 1:1 to 8:1 and the ratio of zeolite:silicate being within the range of about 1:2 to 10:1, which comprises preparing a crutcher slurry of the desired composition containing, on a slurry basis, from 0.1 to 2% of a citric material selected from the group consisting of citric acid, water soluble citrate and mixtures thereof, and from 0.1 to 1.4% of magnesium sulfate, with the total of such citric material and magnesium sulfate, in combination, being gelation retarding and at least 0.4% of the slurry, and mixing such composition in a crutcher during preparation thereof.

4,368,135

ANISOTROPIC COMPOUNDS WITH NEGATIVE OR POSITIVE DC-ANISOTROPY AND LOW OPTICAL ANISOTROPY

Maged A. Osman, Zurich, Switzerland, assignor to BBC, Brown, Boveri & Company, Ltd., Baden, Switzerland

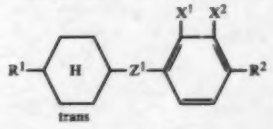
Filed Jun. 30, 1980, Ser. No. 164,692

Claims priority, application Switzerland, Jul. 18, 1979, 6671/79

Int. Cl.³ C09K *3/34;* **C07C** *121/75*

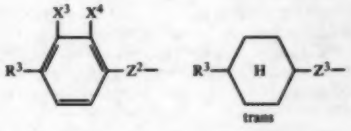
U.S. Cl. 252—299.63 **15 Claims**

1. An anisotropic compound with negative or positive DC-anisotropy and an optical anisotropy $\Delta n \leqq 0.2$ having the formula (I):



(I)

in which R^1 and R^2 are independently hydrogen, alkyl having 1 to 12 carbon atoms, alkoxy having 1 to 12 carbon atoms or one of R^1 and R^2 can represent a cyclical fragment of formulae (1a) or (1b):



(1a) (1b)

wherein one of the bridges Z^1, Z^2 and Z^3 in each formula is carboxyl or oxycarbonyl and the other, when present, is a covalent bond, R^3 is hydrogen, alkyl of 1 to 12 carbon atoms or alkoxy of 1 to 12 carbon atoms, and X^1 and X^4 are independently hydrogen, halogen, nitrile or nitro, wherein at least two of X^1 to X^4 are not hydrogen.

4,368,136

AQUEOUS GEL COMPOSITION FOR TEMPORARY STABILIZATION OF SUBTERRANEAN WELL FORMATION

Joseph R. Murphey, Duncan, Okla., assignor to Halliburton Services, Duncan, Okla.

Division of Ser. No. 840,083, Oct. 6, 1977, Pat. No. 4,199,484. This application Mar. 17, 1980, Ser. No. 130,887

Int. Cl.³ B01J *13/00;* **C09K** *3/00;* **E21B** *43/26*

U.S. Cl. 252—316 **5 Claims**

1. An aqueous gel composition comprising a water soluble neutral polysaccharide polymer containing an easily oxidized component and a breaker comprising an organic C_2–C_{18} alkyl tertiary hydroperoxide with cupric ion and a mixture of surfac-

tants present in the aqueous gel at a temperature and concentration above the cloud point said mixture comprising at least one surfactant of the amine quaternary type which are normally liquid, synthetic or naturally occurring surfactants which can contain alkyl, aryl, hetero and unsaturated radicals or groups which contain about 8–18 carbon atoms per radical and at least one non-cationic water misicible surfactant.

4,368,137

POLYMERS OF OXYALKYLATED PIPERAZINES AND USES THEREOF

Thomas J. Bellos, Kirkwood, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed May 18, 1981, Ser. No. 264,722
Int. Cl.³ C08G *65/34*
U.S. Cl. 252—344 16 Claims

1. A composition of matter comprising oxyalkylated piperazine polymerized by dehydration, or the salts or quaternaries thereof.

4,368,138

WATER SOLUBLE THYMIDINE DERIVATIVE

Israel Marcus, 25 Washington St., Jerusalem, Israel

Filed Jan. 8, 1980, Ser. No. 110,397
Claims priority, application United Kingdom, Jan. 10, 1979, 7900893
Int. Cl.³ B01F *3/18;* A01N *31/14;* A61K *31/70, 31/505*
U.S. Cl. 252—363.5 19 Claims

1. A solubilized thymidine product having increased solubility in aqueous media comprising thymidine and an amount of a solubilizing agent effective to increase the thymidine solubility in aqueous media, the thymidine solubilizing agent being selected from the group consisting of salicylic acid, its derivatives and salts and esters thereof.

13. A method of increasing the solubility of thymidine in aqueous solutions comprising treating thymidine with a thymidine solubilizing agent in an amount effective to increase the aqueous solubility of the thymidine above its normal aqueous solubility and up to at least 0.1 grams thymidine per ml. of water, the thymidine solubilizing agent being selected from the group consisting of salicylic acid, its derivatives and salts and esters thereof.

4,368,139

NONDUSTING FREE-FLOWING SOLID PARTICULATE POLYVALENT METAL CARBOXYLIC ACID SALT COMPOSITIONS AND PROCESS FOR PREPARING THE SAME

Mark W. Pollock, Teaneck, N.J., and George A. Seubert, Jr., Massapequa Park, N.Y., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Filed Feb. 17, 1981, Ser. No. 235,337
Int. Cl.³ C09K *3/00*
U.S. Cl. 252—384 10 Claims

1. Nondusting free-flowing solid particulate polyvalent metal carboxylic acid salt compositions comprising at least one solid particulate polyvalent metal carboxylic acid salt in dusting particulate form, and a liquid epoxy fatty acid ester having a viscosity at 25° C. within the range from about 100 to about 2000 cps in an amount within the range from about 3% to about 20% by weight of the salt composition sufficient to render the particulate salt composition substantially nondusting while maintaining the salt composition free-flowing noncaking and non-tacky.

4,368,140

HALOGENATION PROCESS IN THE PRESENCE OF CYANOQUINONE CATALYST

Robert J. Crawford, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 814,963, Jul. 12, 1977, Pat. No. 4,148,811.
This application Feb. 23, 1979, Ser. No. 14,527
Int. Cl.³ C07C *1/66*
U.S. Cl. 252—426 4 Claims

1. A catalyst system, comprising: a cyanoquinone material selected from tetracyanoquinodimethane and derivatives thereof, and an acidic auxiliary agent selected from PCl_3, PCl_5, PBr_3, thionyl chloride, sulfuryl chloride, oxalyl chloride, sulfonyl chloride, acetyl chloride, phosgene, fluorosulfonic acid, chlorosulfonic acid, and trifluoromethane sulfonic acid.

4,368,141

OLEFIN DISPROPORTIONATION AND CATALYST THEREFOR

Semyon Kukes, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 24, 1981, Ser. No. 276,777
Int. Cl.³ B01J *27/02;* C07C *5/25*
U.S. Cl. 252—439 16 Claims

1. A method of preparing a disproportionation catalyst comprising admixing elemental sulfur with a catalyst consisting essentially of a refractory oxide containing a metal oxide selected from the group consisting of molybdenum oxide and tungsten oxide and activating the catalyst by heating in the presence of an inert gas.

14. A process for the disproportionation of olefins comprising contacting said olefins under suitable reaction conditions with a catalytic amount of a catalyst composition prepared in accordance with a method of claims 1–12.

4,368,142

METHANATION CATALYST

Dieter Frohning, and Gerhard Horn, both of Oberhausen, Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Dec. 29, 1980, Ser. No. 220,381
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1979, 2952683
Int. Cl.³ B01J *21/12, 21/04, 21/10, 23/76*
U.S. Cl. 252—455 R 17 Claims

1. A methanation catalyst comprising cobalt, nickel and magnesium, disposed on a carrier.

3. A methanation catalyst according to claim 1, wherein the said carrier comprises aluminum oxide, an aluminum oxide-silicon oxide combination, aluminum silicate, a mixed oxide of aluminum oxide and silicon-dioxide or silicon dioxide.

4,368,143

COMPOSITION FOR THE STORAGE OF HYDROGEN AND METHOD OF MAKING THE COMPOSITION

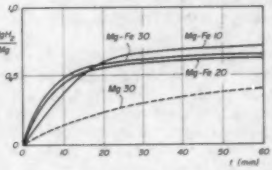
Olivier de Pous, Geneva, Switzerland, assignor to Battelle Memorial Institute, Carouge, Switzerland

Filed Nov. 9, 1979, Ser. No. 92,657
Claims priority, application Switzerland, Nov. 14, 1978, 11673/78
Int. Cl.³ C01B *6/24*
U.S. Cl. 252—457 9 Claims

1. A composition for the storage of hydrogen which consists of a pulverulent intimate mixture of magnesium powder and between 1 and 20% by volume thereof of a separator-agent powder inert to hydrogen and magnesium under hydrogen absorption and desorption conditions, said separator-agent powder being uniformly distributed in said mixture, being physically stable and inhibiting agglomeration of the magnesium powder over a succession of absorption/desorption cycles whereby the magnesium powder is converted to magne-

sium hydride and hydrogen is released upon thermal decomposition of the hydride respectively.

5. A process for producing a magnesium-based composition adapted to absorb hydrogen under predetermined absorption conditions and form magnesium hydride and adapted, upon thermal decomposition of said magnesium hydride, to release



gaseous hydrogen, said process consisting of the steps of conjointly grinding magnesium powder and a powder of a separator agent inert to hydrogen and magnesium, physically stable under said conditions and adapted to prevent agglomeration of the magnesium powder during absorption/desorption cycling of the composition.

4,368,144

SILVER CATALYST FOR PRODUCTION OF ETHYLENE OXIDE

Masashi Mitsuhata, Yokohama; Fumio Watanabe, Kawasaki, and Toshihiko Kumazawa, Yokohama, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Japan

Filed Dec. 22, 1980, Ser. No. 218,700

Int. Cl.³ B01J *21/04, 23/04*

U.S. Cl. 252—463 **8 Claims**

1. A silver catalyst for the production of ethylene oxide, comprising a granular α-alumina carrier having a sodium content of not more than 0.07% by weight and a specific surface area within the range of from 0.5 to 5 m^2/g, a finely divided metallic silver deposited on said carrier in an amount within the range of from 5 to 25% by weight based on the total catalyst, and at least one member selected from the group consisting of alkali metals of Atomic Numbers 19 to 55 and alkali metal compounds, said at least one member being in an amount within the range of from 0.001 to 0.05 gram equivalent weight per kilogram of the total catalyst.

4,368,145

PERFUME USE FOR OXOALKYL ESTERS

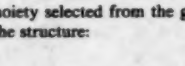
Michael Licciardello, Farmingdale; Richard M. Boden, Monmouth Beach; Hugh Watkins, Lincroft, and Marie R. Hanna, Hazlet, all of N.J., assignors to International Flavors & Fragrances, Inc., New York, N.Y.

Filed Oct. 1, 1981, Ser. No. 307,366

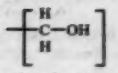
Int. Cl.³ A61K *7/46*

U.S. Cl. 252—522 R **5 Claims**

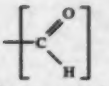
1. A process for augmenting or enhancing the aroma of a perfume or cologne comprising the step of adding to a perfume composition or a cologne base an aroma augmenting or enhancing quantity of at least one oxoalkyl ester defined according to the structure:



wherein Z is a moiety selected from the group consisting of carbinol having the structure:



and carboxyaldehyde having the structure:



and R is selected from the group consisting of 3-heptanyl and phenyl.

4,368,146

LIGHT DUTY HAND DISHWASHING LIQUID DETERGENT COMPOSITION

Michael P. Aronson, Valley Cottage, N.Y.; Edilia A. Larrauri, West New York, and Zahera J. Hussain, Wyckoff, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 172,809, Jul. 28, 1980, abandoned, which is a continuation of Ser. No. 83,026, Oct. 9, 1979, abandoned, which is a continuation of Ser. No. 2,924, Jan. 12, 1979, abandoned. This application Jun. 10, 1981, Ser. No. 272,434

Int. Cl.³ C11D *1/83, 3/28*

U.S. Cl. 252—542 **24 Claims**

1. A method for cleaning kitchen utensils comprising treating said utensils with a liquid detergent composition containing:

(a) from about 1% to about 50% by weight of an anionic surfactant compound, nonionic surfactant compound, or mixtures thereof;

(b) from about 0.1% to about 10% by weight of a polyvinylpyrrolidone having a molecular weight equal to or greater than 40,000, a copolymer of N-vinylpyrrolidone and dimethylaminoethyl methacrylate having a molecular weight from about 40,000 to about 1,500,000, or mixtures thereof; and

(c) from 0 to about 5% by weight of an alkali metal salt of casein.

4,368,147

LIQUID DETERGENT OF CONTROLLED VISCOSITY

Jack T. Inamorato, Westfield, and William Chirash, New Providence, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 62,456, Jul. 30, 1979, abandoned, which is a continuation-in-part of Ser. No. 35,490, May 3, 1979, abandoned, which is a continuation of Ser. No. 762,217, Jan. 24, 1977, abandoned, which is a continuation of Ser. No. 511,760, Oct. 3, 1974, abandoned. This application Jun. 2, 1981, Ser. No. 269,917

Int. Cl.³ C11D *1/831, 1/72*

U.S. Cl. 252—545 **9 Claims**

1. A liquid detergent having a viscosity in the range of 40 to 120 centipoises at 24° C. and which is fluid at 7° C. which consists essentially of, by weight, from 10% to 60% of a water-soluble C_2–C_3 alkoxylated C_{10}–C_{18} alkanol nonionic detergent; 4% to to 12% of a C_2–C_3 alkanol, the proportion of alcohol being such that the physical properties of the liquid detergent would be unsatisfactory in the absence of a viscosity control and gel prevention agent; 1% to 6% of sodium or potassium formate as a viscosity control and gel prevention agent and 22 to 84.5% of water.

4,368,148

PROTEIN PP_9, PROCESS FOR ITS ENRICHMENT AND ITS ISOLATION AND ITS USE

Hans Bohn, Marburg, Fed. Rep. of Germany, assignor to Behringwerke Aktiengesellschaft, Marburg, Fed. Rep. of Germany

Filed Apr. 8, 1981, Ser. No. 252,089

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1980, 3013724

Int. Cl.³ A61K *35/50, 39/395;* C07G *7/00*

U.S. Cl. 260—112 B 3 Claims

1. An isolated, concentrated tissue protein, PP_9, obtained by fractionating an extract of human organs or a solution obtained from such an extract, said tissue protein having:

(a) a content of carbohydrates of 5.57±1.35% consisting of 4.9±1.0% of hexoses, 0.1±0.1% of hexosamines, 0.07±0.05% of fucose, and 0.5±0.20 of neuraminic acid;

(b) a sedimentation coefficient $S_{20,w}$ of 3.2±0.2 S;

(c) a molecular weight of 35,100±3,800 determined in an ultracentrifuge;

(d) a molecular weight of 40,000±4,000 determined in a polyacrylamide gel containing sodium dodecyl sulfate;

(e) an extinction coefficient $E_{1\ cm}^{1\%}$ (280 nm) of 14.6±1.0;

(f) an electrophoretic mobility in the range of the β_1-globulins;

(g) an isoelectric point in a pH range of 5.0–6.8; and

(h) an amino acid analysis of

	Mol %	Variation coefficient (%)
Lysine	8.04	3.49
Histidine	2.58	5.06
Arginine	3.49	1.8
Aspartic acid	10.30	10.45
Threonine	4.29	9.82
Serine	5.7	10.77
Glutamic acid	11.18	2.15
Proline	6.17	13.61
Glycine	5.50	0.79
Alanine	5.69	1.11
Cystine/2	2.29	4.38
Valine	7.12	2.58
Methionine	1.47	9.64
Isoleucine	5.28	5.28
Leucine	10.55	3.23
Tyrosine	3.95	9.68
Phenylalanine	3.87	5.48
Tryptophan	2.36	0.69

4,368,149

PROTEIN HYBRID HAVING CYTOTOXICITY AND PROCESS FOR THE PREPARATION THEREOF

Yasuhiko Masuho, Hino, and Takeshi Hara, Hachioji, both of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Dec. 16, 1981, Ser. No. 331,342

Claims priority, application Japan, Dec. 22, 1980, 55-180553

Int. Cl.³ A61K *39/44;* C07G *7/00*

U.S. Cl. 260—112 B 7 Claims

1. A protein hybrid having cytotoxicity prepared by covalently bonding an immunoglobulin, or its fragment, which is capable of binding selectively to an antigen produced by a cell to be killed, to a protein which is obtained from *Momordica charantia* and capable of inhibiting protein synthesis.

4,368,150

METHOD FOR PROTECTING GUANIDINO GROUP AND RESTORING THE SAME

Masahiko Fujino, Takarazuka, and Osamu Nishimura, Toyonaka, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

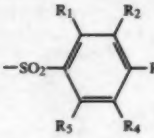
Filed Feb. 11, 1981, Ser. No. 233,641

Claims priority, application Japan, Feb. 12, 1980, 55-16456; Nov. 4, 1980, 55-154919; Jan. 5, 1981, 56-560

Int. Cl.³ C07C *103/52, 147/13*

U.S. Cl. 260—112.5 R 10 Claims

1. In a method of producing a peptide containing a guanidino group which comprises protecting the guanidino group of a guanidino-containing starting compound with a protecting group, subjecting the protected compound to a peptide synthesis reaction and removing the protective group with an acid, the improvement wherein the protecting group is a substituted benzenesulfonyl group of the formula



wherein R_1, R_3 and R_5 are methyl or methoxy, and R_2 and R_4 are hydrogen or methyl, provided that (1) when R_3 is methyl, all of R_1, R_2, R_4 and R_5 are methyl, (2) when R_3 is methoxy and R_2 and R_4 are both hydrogen, R_1 and R_5 are both methoxy and (3) when R_3 is methoxy R_1 and R_5 are both methyl, R_2 is hydrogen or methyl and R_4 is hydrogen or methyl.

4,368,151

7S AND 11S VEGETABLE PROTEIN FRACTIONATION AND ISOLATION

Paulette A. Howard; William F. Lehnhardt, and Frank T. Ortboefer, all of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Aug. 10, 1981, Ser. No. 291,670

Int. Cl.³ A23J *1/14*

U.S. Cl. 260—123.5 13 Claims

1. A method for fractionating and recovering an enriched 11S protein fraction from a crude vegetable portein aqueous solution which contains, on a total protein weight basis, water-soluble 7S protein and water-soluble 11S protein as the major protein components of said solution, said method comprising:

(A) providing to said solution a sufficient amount of:

(i) from about 0.05 mM to about 5.0 mM sulfite ion; and

(ii) water-soluble salt to provide an ionic solution strength ranging from about 0.0005u. to about 0.2u;

(B) precipitating at least a major weight of said 11S protein from said solution within the pH 5.3–6.3 range; and

(C) recovering the precipitated 11S protein from said solution.

4,368,152

CONTROL OF RESIDUAL SOLVENT IN PROTEINACEOUS MATERIALS

Richard W. Oughton, Kingston, Canada, assignor to Du Pont Canada Inc., Mississauga, Canada

Filed Apr. 28, 1981, Ser. No. 258,385

Claims priority, application Canada, May 15, 1980, 352013

Int. Cl.³ A23J *1/14*

U.S. Cl. 260—123.5 12 Claims

1. An improvement in the process for control of the amount of residual solvent in comminuted proteinaceous material selected from the group consisting of soya beans and rapeseed, in which the comminuted proteinaceous material is admixed with a hydrocarbon solvent for oil in the material and at least a fraction of the proteinaceous material is separated from the

solvent and treated for removal of residual solvent, in which the improvement is characterized by:

(a) maintaining the temperature of the admixture of proteinaceous material and solvent in the range of 0°–35° C.; and

(b) controlling the period of time of contact of solvent and proteinaceous material to a minimum practical time needed to de-oil the material and to accomplish any separation of the material into fractions and the period of time of treatment for removal of residual solvent to a range of 5 to 500 minutes, whereby separation of a product having a level of residual solvent less than 60 ppm may be effected.

4,368,153

PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING NOVEL NONDIFFUSIBLE 2-(2-PYRIDYLAZO)-4,5-BISTERTIARY AMINO)PHENOL BLACK DYE-RELEASING COMPOUNDS AND PRECURSORS THEREOF

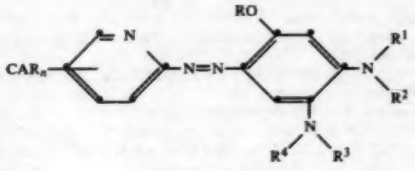
Norman W. Kalenda, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 282,612, Jul. 13, 1981. This application Mar. 5, 1982, Ser. No. 354,985

Int. Cl.³ C09B *45/00, 29/22, 29/36, 31/14*

U.S. Cl. 260—156 **15 Claims**

1. A nondiffusible compound having a releasable black dye moiety or precursor thereof, said compound having the formula:



wherein:

(a) R represents hydrogen, a hydrolyzable moiety or CAR;

(b) R^1 and R^2 each independently represents an alkyl group of 1 to about 6 carbon atoms, CAR, or can be taken together with the nitrogen to which they are attached to complete a 5- or 6-membered heterocyclic ring;

(c) R^3 and R^4 each independently represents an alkyl group of 1 to about 6 carbon atoms, CAR, or can be taken together with the nitrogen to which they are attached to complete a 5- or 6-membered heterocyclic ring;

(d) CAR represents a ballasted carrier moiety capable of releasing said diffusible black dye moiety or precursor thereof under alkaline conditions; and

(e) n is 0, 1 or 2, with the proviso that when n is 0, then at least one of R, R^1, R^2, R^3, or R^4 is CAR.

4,368,154

PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING NOVEL NONDIFFUSIBLE BRIDGED AZOAMINOPHENOL MAGENTA DYE-RELEASING COMPOUNDS AND PRECURSORS THEREOF

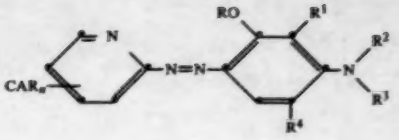
Richard B. Anderson, and Norman W. Kalenda, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 282,613, Jul. 13, 1981. This application Mar. 5, 1982, Ser. No. 355,028

Int. Cl.³ C09B *45/00, 29/22, 29/36, 31/14*

U.S. Cl. 260—156 **14 Claims**

1. A nondiffusible compound having a releasable magenta dye moiety or precursor thereof, said compound having the formula:



wherein:

(a) R represents hydrogen, a hydrolyzable moiety or CAR;

(b) R^1 represents hydrogen;

(c) R^2 represents an alkyl group of 1 to about 6 carbon atoms or CAR; or R^1 and R^2 represent an alkylene group which can be taken together with the atoms to which they are attached to complete a 5- or 6-membered heterocyclic ring;

(d) R^3 represents an alkyl group of 1 to about 6 carbon atoms or CAR;

(e) R^4 represents hydrogen; or R^3 and R^4 represent an alkylene group which can be taken together with the atoms to which they are attached to complete a 5- or 6-membered heterocyclic ring;

with the proviso that at least one of said 5- or 6-membered heterocyclic rings of (c) or (e) is present in said compound;

(f) CAR represents a ballasted carrier moiety capable of releasing said diffusible magenta dye moiety or precursor thereof under alkaline conditions; and

(g) n is 0, 1 or 2, with the proviso that when n is 0, then at least one of R, R^2 or R^3 is CAR.

4,368,155

MONOAZO COMPOUNDS DERIVED FROM META-AMINO-BENZOIC ACID ANILIDES AND ACETOACETYLAMINO-BENZIMIDAZOLONE

Klaus Hunger, and Manfred Pesenacker, both of Kelkheim, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

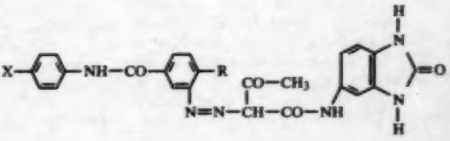
Division of Ser. No. 86,125, Oct. 18, 1979, Pat. No. 4,302,388. This application May 4, 1981, Ser. No. 259,965

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1978, 2845946

Int. Cl.³ C09B *29/01, 29/32;* **D06P** *1/44*

U.S. Cl. 260—157 **1 Claim**

1. A compound of the formula



wherein R is methoxy and X is carbamoyl or acetamino.

4,368,156

PREPARATION OF 4-HALOAZETIDIN-2-ONES FROM 4-SULFINOAZETIDIN-2-ONES

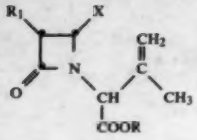
Wayne A. Spitzer, Indianapolis; Stjepan Kukolja, Carmel; Theodore Goodson, Jr., Indianapolis, all of Ind., and Steven R. Lammert, Decatur, Ill., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 9, 1981, Ser. No. 241,872

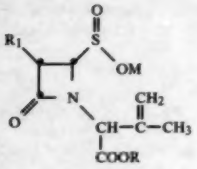
Int. Cl.³ C07D *205/08;* **C07B** *9/00;* **C07D** *403/04, 401/04*

U.S. Cl. 260—239 A **21 Claims**

1. A process for preparing a 4-haloazetidinone of the formula

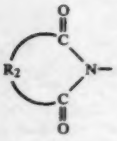


which comprises reacting in an inert solvent at a temperature between about −20° C. and about 45° C. a 4-sulfinoazetidinone of the formula



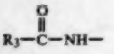
with at least one molar equivalent of an N-X or O-X positive halogen reagent, where in the above formulas M is hydrogen, sodium or potassium, X is chloro, bromo, or iodo; R is a carboxy-protecting group; and R_1 is

(1) an imido group of the formula



wherein R_2 is C_2–C_4 alkenylene or 1,2-phenylene;

(2) an amido group of the formula

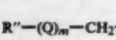


wherein R_3 is

(a) hydrogen, C_1–C_4 alkyl, halomethyl, cyanomethyl, benzyloxy, p-nitrobenzyloxy, t-butyloxy, 2,2,2-trichloroethoxy, or p-methoxybenzyloxy;

(b) the group R′, wherein R′ is phenyl or phenyl substituted by 1 or 2 halogens, protected hydroxy, nitro, cyano, C_1–C_4 alkyl, or C_1–C_4 alkoxy;

(c) a group of the formula

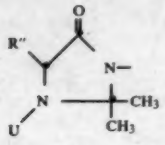


wherein R″ is R′ as defined above, 1,4-cyclohexadienyl, thienyl or furyl; m is 0 or 1; and Q is O or S; with the limitation that when m is 1, R″ is R′;

(d) a group of the formula

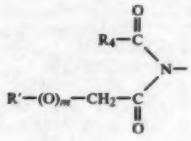
wherein R″ is as defined above, and W is protected hydroxy, protected carboxy, or protected amino;

(3) an imidazolidinyl group of the formula



wherein R″ is as defined above and U is nitroso or acetyl; or R_1 is

(4) an imido group of the formula



wherein R′ is as defined above, m is 0 or 1, and R_4 is C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy, or 2,2,2-trichloroethoxy.

4,368,157

INTERMEDIATES TO PRODUCE IMIDAZODIAZEPINES

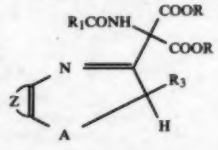
Armin Walser, West Caldwell, and Rodney I. Fryer, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 905,820, May 15, 1978, Pat. No. 4,280,957, which is a continuation of Ser. No. 663,660, Mar. 4, 1976, abandoned, which is a continuation-in-part of Ser. No. 602,691, Aug. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 504,924, Sep. 11, 1974, abandoned. This application Mar. 12, 1981, Ser. No. 242,944

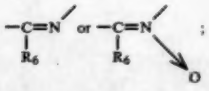
Int. Cl.³ C07D *487/04, 495/04, 243/16, 401/04*

U.S. Cl. 260—239 BD **1 Claim**

1. A compound of the formula

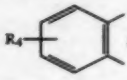


wherein R is lower alkyl; A is

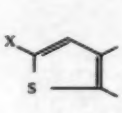


R^3 is selected from the group consisting of hydrogen and lower alkyl; R^6 is selected from the group consisting of phenyl, mono-halo or mono-nitro substituted phenyl, di-halo or halo and nitro substituted phenyl, pyridyl and mono-halo or mono-nitro substituted pyridyl; R^4 is selected from the group consisting of hydrogen, halogen, nitro, cyano, trifluoromethyl, lower alkyl, mono-or di-lower alkyl substituted amino, amino, hydroxy lower alkyl and lower alkanoyl; R_1 is selected from the group consisting of hydrogen, lower alkyl, phenyl, alkoxy lower alkyl, mono-halo or mono-nitro substituted phenyl, pyridyl, aralkyl; and

is selected from the group consisting of

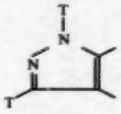


wherein X is chlorine, bromine, iodine or hydrogen



wherein X is chlorine, bromine, iodine or hydrogen

and



wherein T is hydrogen or lower alkyl.

4,368,158

INTERMEDIATES TO PRODUCE IMIDAZODIAZEPINES

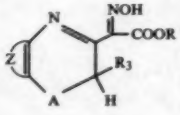
Armin Walser, West Caldwell, and Rodney I. Fryer, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 905,820, May 15, 1978, Pat. No. 4,280,957, which is a continuation of Ser. No. 663,660, Mar. 4, 1976, abandoned, which is a continuation-in-part of Ser. No. 602,691, Aug. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 504,924, Sep. 11, 1974, abandoned. This application Mar. 12, 1981, Ser. No. 242,947

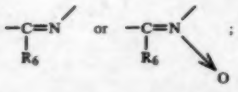
Int. Cl.³ C07D *487/04, 495/04, 243/16, 401/04*

U.S. Cl. 260—239 BD **1 Claim**

1. A compound of the formula

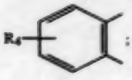


wherein R is lower alkyl; A is

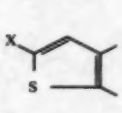


R_3 is selected from the group consisting of hydrogen and lower alkyl; R_6 is selected from the group consisting of phenyl, mono-halo or mono-nitro substituted phenyl, di-halo or halo-nitro substituted phenyl, di-halo or halo-nitro substituted phenyl, pyridyl and mono-halo or mono-nitro substituted pyridyl; R_4 is selected from the group consisting of hydrogen, halogen, nitro, cyano, trifluoromethyl, lower alkyl, mono-or di-lower alkyl substituted amino, hydroxy lower alkyl and lower alkanoyl; and

is selected from the group consisting of



wherein X is chlorine, bromine, iodine or hydrogen



wherein X is chlorine, bromine, iodine or hydrogen

and

wherein T is hydrogen or lower alkyl.

4,368,159

INTERMEDIATES TO PRODUCE IMIDAZODIAZEPINES

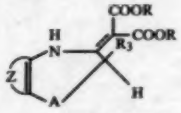
Armin Walser, West Caldwell, and Rodney I. Fryer, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 905,820, May 15, 1978, Pat. No. 4,280,957, which is a continuation of Ser. No. 663,660, Mar. 4, 1976, abandoned, which is a continuation-in-part of Ser. No. 602,691, Aug. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 504,924, Sep. 11, 1974, abandoned. This application Mar. 13, 1981, Ser. No. 243,409

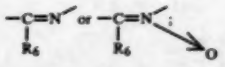
Int. Cl.³ C07D *487/04, 495/04, 243/16, 401/04*

U.S. Cl. 260—239 BD **1 Claim**

1. A compound of the formula

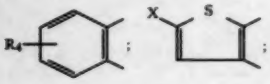


wherein R is lower alkyl; A is

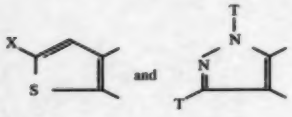


R_3 is selected from the group consisting of hydrogen and lower alkyl; R_6 is selected from the group consisting of phenyl, mono-halo or mono-nitro substituted phenyl, di-halo or halo-nitro substituted phenyl, pyridyl and mono-halo or mono-nitro substituted pyridyl; R_4 is selected from the group consisting of hydrogen, halogen, nitro, cyano, trifluoromethyl, lower alkyl, mono or di-lower alkyl substituted amino, amino, hydroxy lower alkyl and lower alkanoyl; and

is selected from the group consisting of



wherein X is chlorine, bromine, iodine or hydrogen



wherein X is chlorine, bromine, iodine or hydrogen

wherein T is hydrogen or lower alkyl.

4,368,160

PROCESS FOR PREPARING 17α-HYDROXY-PREGN-4-EN-3,20-DIONE DERIVATIVES

Anna Boór née Mezei; József Tóth; Tamas Szen; László Gabor; Piroska Major née Fastner, and Sandor Holly, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar R.T., Budapest, Hungary

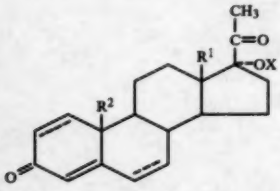
Filed Apr. 2, 1982, Ser. No. 365,015

Claims priority, application Hungary, Apr. 16, 1981, 989

Int. Cl.³ C07J 5/00

U.S. Cl. 260—397.4 **13 Claims**

1. A process for preparing pregnane derivatives of formula I,



(I)

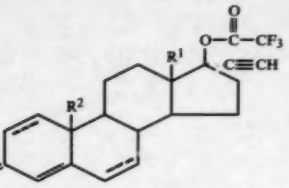
wherein

R^1 stands for a methyl or an ethyl group,

R^2 represents a hydrogen atom or a methyl group and

X is a hydrogen atom or a formyl or acetyl group, and the bond indicated by a dotted and a continuous line stands for a single or a double bond between the two neighbouring carbon atoms,

comprising the step of reacting a trifluoroacetate ester of formula II,



(II)

wherein R^1 and R^2 are as defined above, with formic acid or acetic acid in the presence of a catalytic amount of a mercury salt in a dipolar proton-free or basic solvent.

4,368,161

AGENT FOR IMPROVING CHROMA AND BRIGHTNESS OF PIGMENTS

Seigo Iwamoto, Tokyo, and Eiichi Saito, Hachioji both of Japan, assignors to Nihonshikizai Kogyo Co., Ltd., Tokyo and Takeda Chemical Industries, Ltd., Osaka both of, Japan

Division of Ser. No. 127,981, Mar. 6, 1980, Pat. No. 4,327,017. This application Apr. 10, 1981, Ser. No. 253,145

Claims priority, application Japan, Mar. 8, 1979, 54-27481

Int. Cl.³ C07F 5/06

U.S. Cl. 260—448 R **1 Claim**

1. An agent for improving the chroma and brightness of pigments, which consists of a product from the reaction of a basic polyaluminium salt with an amino-acid based anionic surfactant represented by the formulas: $RCON(CH_3)CH_2COONa$ or $RCON(CH_3)CH_2CH_2COONa$, wherein R is a straight-chain or branched-chain alkyl group having a carbon atom number of 12 to 18.

4,368,162

PROCESS FOR PRODUCING AMINOMETHYLPHOSPHONIC ACID

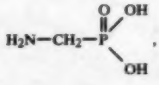
Ludwig Maier, Arlesheim, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 2, 1981, Ser. No. 317,048

Int. Cl.³ C07C 9/38

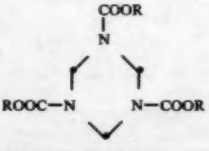
U.S. Cl. 260—502.5 G **13 Claims**

1. A process for producing aminomethylphosphonic acid of the formula I



(I)

which process comprises reacting a hexahydro-1,3,5-triazine-N,N′,N″-tris-carboxylic acid ester of the formula II

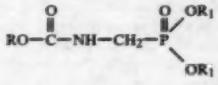


(II)

wherein R is an alkyl group having 1 to 4 carbon atoms, or a phenyl group, at a temperature of 90°–150° C. in the presence of a Lewis acid as catalyst, with an ester of the phosphorous acid of the formula III

(III)

wherein R_1 is an alkyl group having 1 to 5 carbon atoms, a phenyl group, a benzyl group, the 2-cyanoethyl group or the 2,2,2-trichloroethyl group, to give an N-carboxyaminomethylphosphonic acid derivative of the formula IV



(IV)

wherein R and R_1 have the meanings defined above, and subsequently hydrolysing this derivative in an aqueous medium, in the presence of a strong acid, to obtain aminomethylphosphonic acid.

4,368,163

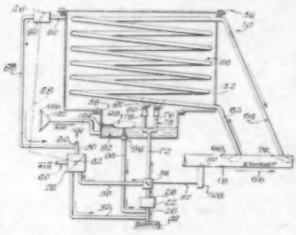
APPARATUS FOR VAPORIZING FUEL FOR ENGINE IN CONJUNCTION WITH CARBURETOR

Ray M. Covey, Jr., 9700 Trinidad, El Paso, Tex. 79925

Filed Jul. 1, 1981, Ser. No. 279,619

Int. Cl.³ F02M *31/14*

U.S. Cl. 261—39 R **7 Claims**



1. Apparatus for retrofitting to a self contained automotive vehicle including the following components in its original construction—an engine, a carburetor for controlling the flow of liquid fuel to the engine and including a throttle, an inlet fuel line from a supply to the carburetor and an outlet fuel line from the carburetor to the engine, a manual control for controlling the carburetor throttle, a heat system including a circuit having a liquid coolant for cooling the engine, and an exhaust pipe leading from the engine,

said apparatus comprising the following components mounted in and attached to the vehicle and removable therefrom substantially without altering the physical construction or operability of the engine according to its original design and construction,

a vaporizer chamber including a generally enclosed housing,

a tubing coil in the housing having inlet and outlet terminals extending through the housing and into the heat system for impelling a stream of heated fluid through the coil,

a vaporizer fuel line leading from the fuel supply to the vaporizer chamber,

A vapor feed line leading from the vaporizer chamber to the outlet line from the carburetor,

a second throttle in the vapor feed line,

means interconnecting the throttles and operable, in response to actuation of said manual control, for operating said second throttle simultaneously with the carburetor throttle and in the same opening/closing sense, and

a feed valve for controlling the flow of fuel from the supply to the carburetor and the vaporizer tank selectively.

4,368,164

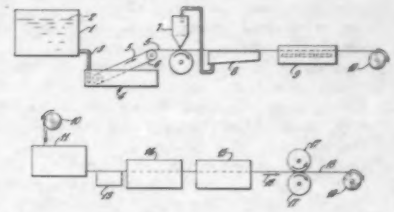
GLASS FIBER COMPOUNDING IN GASKETS AS ASBESTOS REPLACEMENT

Clarence W. Charon, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 192,653, Oct. 1, 1980, abandoned. This application Oct. 29, 1981, Ser. No. 316,270

Int. Cl.³ B29H *9/02*

U.S. Cl. 264—37 **10 Claims**



1. A method of producing a glass-fiber containing rubber-based composite which comprises:

(a) forming a sheet of glass fibers;

(b) saturating said sheet with a rubber emulsion to form a glass sheet held together by a rubber bond;

(c) dissolving said rubber bond in a rubber-containing solvent to form a rubber matrix containing solvent and having said glass fibers dispersed therein; and,

(d) removing solvent from said rubber matrix to form a glass fiber containing rubber-based composite.

4,368,165

ROLL PRESS AND METHOD OF REGULATION OF THE THROUGHPUT OF A ROLL PRESS

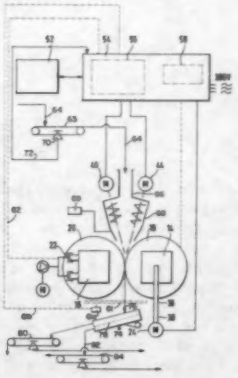
Hans-Georg Bergendahl, Bochum-Weitmar, Fed. Rep. of Germany, assignor to Maschinenfabrik Koopern GmbH & Co. KG, Hattingen, Fed. Rep. of Germany

Filed Dec. 12, 1980, Ser. No. 215,990

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1979, 2950072

Int. Cl.³ B29C *3/02, 3/06, 15/00*

U.S. Cl. 264—40.4 **14 Claims**



1. A method of regulating the operation of a roll press of the type having a pair of cooperating side-by-side press rollers, a

variable speed drive motor for rotating said press rollers, a variable rate feed device which feeds material to said rollers and means for evaluating the degree of loading of said rollers comprising:

(a) operating said press under a first control mode wherein;

(1) when said press is at a loading which is equal to the nominal loading thereof, the speed of said rollers is increased until the actual loading of said press is less than said nominal loading;

(2) when said press is at a loading which is less than the nominal loading thereof, the rate of said feed device is increased in an attempt to increase the loading of said press to the nominal loading thereof;

(3) if after increasing the rate of said feed device a predetermined amount the loading of said press is still less than the nominal loading thereof, the control of said press is effected by;

(b) operating said press under a second mode wherein;

(1) when the loading of said press is less than the nominal loading thereof, the speed of the rollers is reduced until the loading of said press equals the nominal loading thereof;

(2) when the loading of said press equals the nominal loading thereof, the rate of said feed device is reduced until the loading of said press is less than the nominal loading thereof and the operation of said press is returned to said first control mode.

4,368,166

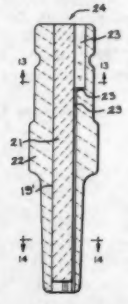
METHOD FOR THE PRODUCTION OF A CERAMIC INSULATOR

Jonathan W. Hinton, Birmingham; Frederick J. Powell, East Detroit, and Robert W. Matz, Troy, all of Mich., assignors to Champion Spark Plug Company, Toledo, Ohio

Continuation of Ser. No. 85,505, Oct. 17, 1979, abandoned. This application Aug. 24, 1981, Ser. No. 295,935

Int. Cl.³ C04B *37/00*

U.S. Cl. 264—61 **2 Claims**



1. A method for producing a ceramic insulator having at least two internal slots extending longitudinally of the insulator, said method consisting of the steps of pressing ceramic batch around a contoured arbor having at least two longitudinally extending fins to form an outer piece having a bore with grooves therein corresponding to the fins, removing the arbor from and contouring the outer piece to a desired external shape, pressing ceramic batch to form an inner piece, contouring the inner piece to fit within the bore of the outer piece, positioning the inner piece within the bore of the outer piece and firing both pieces, whereby the contoured surface of the inner piece closes the grooves in the bore of the outer piece to form slots extending longitudinally within the ceramic insulator.

4,368,167

METHOD OF MAKING AN ELECTRODE

Aldo S. Berchielli, Westerly, R.I., assignor to Yardney Electric Corporation, Pawcatuck, Conn.

Filed Mar. 5, 1981, Ser. No. 240,683

Int. Cl.³ H01M *4/54*

U.S. Cl. 264—104 **5 Claims**

1. An improved method of making a silver chloride and copper chloride-containing electrode, said method comprising the steps of:

a. forming a minimum melting point eutectic of silver chloride and cuprous chloride;

b. heating said eutectic to above the melting point thereof, then cooling, solidifying and powdering said eutectic;

c. uniformly mixing said eutectic together with additional particulate cuprous chloride to reduce the concentration of silver chloride of the resulting mixture to about 1–10 percent by weight; and,

d. forming the resulting mixture into an improved strong electrode.

4,368,168

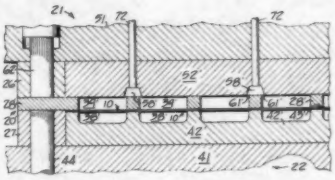
METHOD FOR ENCAPSULATING ELECTRICAL COMPONENTS

Dusan Slepcevic, 1240A Mountain View-Alviso Rd., Sunnyvale, Calif. 94086

Division of Ser. No. 925,295, Jul. 17, 1978, Pat. No. 4,332,537. This application Dec. 6, 1980, Ser. No. 194,593

Int. Cl.³ B29C *6/00, 7/00*; B29D *3/00*

U.S. Cl. 264—272.14 **12 Claims**



1. The method of encapsulating electrical components by use of a cavity plate means having spaced-apart outer surfaces and openings therethrough from one outer surface to the other, said electrical components having electrical leads attached thereto and extending therefrom, said method comprising:

(a) placing first and second mold plates in opposition to each other,

(b) moving said cavity plate means laterally relative to both said first and second mold plates and positioning said cavity plate means between mold surfaces of first and second mold plates with one of said outer surfaces of said cavity plate means being against the mold surface of said first mold plate,

(c) injecting fluid plastic at a point between said mold surface of said first mold plate and said one outer surface of said cavity plate means and forcing said injected fluid plastic to flow between said mold surface of said first mold plate and said one outer surface of said cavity plate means from the point of injection to said openings of said openings of said cavity plate means,

(d) holding said electrical components and electrical leads with said electrical components being spaced from said mold surface of said first mold plate and in registration with said openings of said cavity plate means and with said electrical leads being maintained out of contact with said fluid plastic prior to entry of said fluid plastic into said openings,

(e) allowing said plastic to harden,

(f) separating said cavity plate means from said first mold plate after said plastic has hardened and then removing

said cavity plate means from between said first and second mold plates,

(g) subsequently removing said electrical components from said cavity plate means.

4,368,169

PYROCHEMICAL PROCESSES FOR THE DECOMPOSITION OF WATER

Ralph H. Kummler, Birmingham; Charles B. Leffert, Troy; Robert G. Ozarski, Detroit; Robert A. Piccirelli, Grosse Pointe Woods, and Theodor Teichmann, Ann Arbor, all of Mich., assignors to Texas Gas Transmission Corporation, Owensboro, Ky.

Filed Apr. 16, 1975, Ser. No. 568,661
Int. Cl.³ G21B 1/00
U.S. Cl. 376—148 3 Claims

1. A process for decomposition of a stable compound comprising:

a. injecting carbon dioxide and a metal M having an associated metal oxide M_xO_y into the central reaction chamber of a nuclear fusion reactor, said metal oxide having a decompositing temperature which is less than the boiling temperature of said metal and being chemically more stable than is said carbon oxide,

b. causing a D-T nuclear fusion reaction within said chamber releasing heat and radiation such that said metal oxide and carbon monoxide are formed pyrochemically, and

c. separating said carbon monoxide from said metal oxide,

d. injecting said metal oxide obtained in step (c) into said central reaction chamber and causing a D-T nuclear fusion reaction within said chamber releasing heat and radiation such that said metal and oxygen are formed from said metal oxide, and

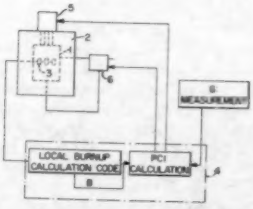
e. Separating said oxygen from said metal to obtain the starting metal.

4,368,170

METHOD OF OPERATING NUCLEAR REACTORS

Masaomi Oguma, and Masao Ishida, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 6, 1978, Ser. No. 883,588
Claims priority, application Japan, Mar. 4, 1977, 52/22616
Int. Cl.³ G21C 7/36
U.S. Cl. 376—216 6 Claims



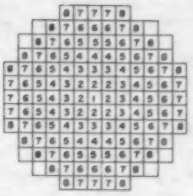
1. A method of operating a nuclear reactor which comprises a plurality of fuel elements each having a cladding and fuel pellets stacked in the cladding therein, control rods, and recirculation system for cooling the core by recirculation of coolant, comprising the steps of detecting burnup of the fuel element; determining the upper limit of a linear heat generation rate of the fuel element at which the reactor can raise its power by the withdrawal of the control rod, referring to the burnup detected and an amount of the diametral gap between the cladding and the pellets; and withdrawing the control rod to raise the power of the reactor within the upper limit of the linear heat generating rate.

4,368,171

METHOD OF CONTROLLING OPERATION OF NUCLEAR REACTOR

Hiromi Maruyama; Masayuki Izumi; Sadao Uchikawa, and Renzo Takeda, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 936,921, Aug. 25, 1978. This application Nov. 25, 1980, Ser. No. 210,168
Claims priority, application Japan, Aug. 26, 1977, 52-101557
Int. Cl.³ G21C 7/08
U.S. Cl. 376—217 8 Claims



1. A method of operating a boiling water nuclear reactor having a core with a flattened axial power distribution by virtue of the fuel distribution and a plurality of control rods insertable into the core, comprising the steps of grouping the control rods into a plurality of groups including at least a first group consisting of one control rod which is located at the center of the core, a second group consisting of the nearest eight control rods which surround the control rod of the first group, a third group consisting of twelve control rods which are located adjacent to and outside of the control rods of the second group, a fourth group consisting of sixteen control rods which are located adjacent to and outside the control rods of the third group, a fifth group consisting of twenty control rods which are located adjacent to and outside of the control rods of the fourth group, and a sixth group consisting of twenty-four control rods which are located adjacent to and outside of the control rods of the fifth group, and operating the core with control rod patterns of only deep control rods during the operation period of the core other than when less than six inserted control rods are required for achieving the critical state of the core, the step of operating the core with only deep control rods including forming each deep control rod pattern with control rods which are selected from only alternate ones of the plurality of said groups and disposed in a symmetrical arrangement with respect to the center of the core, and deeply inserting the selected control rods into the core to a depth of at least $\frac{2}{3}$ of the core, all other control rods which are not selected being completely withdrawn and only the movement of the control rods achieving a radial flattened power distribution.

4,368,172

HEAT RESISTANT CAST ALLOY

Makoto Takahashi, and Junichi Sugitani, both of Hirakata, Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed May 29, 1980, Ser. No. 154,450
Claims priority, application Japan, May 31, 1979, 54-68385
Int. Cl.³ C22C 30/00
U.S. Cl. 420—584 4 Claims

1. A heat resistant cast alloy consisting of 0.35~0.6% C, 1.58~2.5% Si, 0.3~0.9% Mn, 24~28% Cr, 30~38% Ni, 2~6% W, 0.07~0.3% N, P<0.04% and S<0.04%, balance substantially Fe, as represented on the weight basis.

4,368,173

REACTOR FOR OXICHLORINATION OF ETHYLENE AND PROCESS THEREFOR

Humberto D. Jimenez, Mexico City, and Emilio W. Mora, Puebla, both of Mexico, assignors to Instituto Mexicano del Petroleo, Mexico

Filed Sep. 11, 1980, Ser. No. 186,159
Claims priority, application Mexico, Sep. 12, 1979, 179250
Int. Cl.³ B01J 8/06
U.S. Cl. 422—197 7 Claims

1. An improved multitubular heat exchanger type reactor to carry out the oxichlorination of ethylene to obtain preferably 1,2 dichloro ethane comprising:

a calender reactor including a casing and a system of vertical tubes;

a first mirror joined to the upper ends of the vertical tubes;

a second mirror joined to the lower ends of the vertical tubes;

a degasifying chamber formed as an upper dome attached to the upper portion of the casing;

a distributing chamber for the reactants, said chamber being formed as a lower dome or feeding header attached to the lower portion of the casing;

at least one diffusing element for the reaction gases individually coupled to the inside of at least one reaction tube, wherein each said diffusing element comprises a ferrule including a metallic cylindrical ferrule sleeve, a horizontal annular stainless metallic plate attached to the upper edge of said cylindrical sleeve, a tubular element affixed to the circular inner surface of said annular plate, a movable tubular element adjustably mounted inside said tubular element, and a ferrule cap mounted on said tubular element;

a holder for said ferrule attached to the lower end of the calender tubes; and

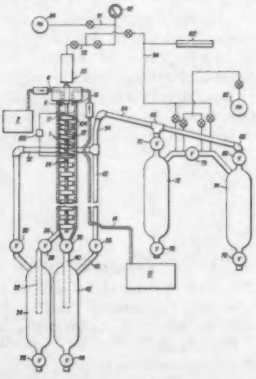
a metallic granule catalyst bed located on the cylindrical plate of the ferrule.

4,368,174

APPARATUS FOR A CONTINUOUS DOWN-FLOW ZEOLITE PRODUCTION

Ernest W. Valyocsik, Yardley, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,556
Int. Cl.³ F28D 21/00
U.S. Cl. 422—208 9 Claims



1. An apparatus for preparing crystalline zeolite materials on a continuous-stream basis comprising

a substantially vertically-oriented reactor means,

a stirring means inside said reactor means, said stirring means being operatively associated with said reactor means,

a heating means surrounding said reactor means,

at least one reactants entrance means in the upper portion of said reactor means for continuously introducing reactants into said reactor means,

a product exit means in the lower portion of said reactor means for continuously removing crystalline zeolite product from said reactor means comprised of

a first product exit means connected to a first crystalline zeolite product collecting means by a conduit containing a first valve means, and

a second product exit means connected to a second crystalline zeolite product collecting means by a conduit containing a second valve means, and

pressurizing means for pressurizing said reactor means with an inert gas.

4,368,175

ION EXCHANGE ENRICHMENT OF URANIUM ISOTOPES

Tetsuya Miyake, Kawasaki; Kunihiko Takeda, Yokohama, and Hatsuki Onitsuka, Fujisawa, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 5, 1980, Ser. No. 156,727
Claims priority, application Japan, Jun. 22, 1979, 54-78069
Int. Cl.³ C01G 43/00
U.S. Cl. 423—7 6 Claims

1. In a process for the enrichment of one isotope in a mixture of uranium isotopes by passing a solution of the mixture in a solvent through an anion exchanger thereby forming on the anion exchanger a boundary (A) between a uranium adsorption zone and an adjacent reducing agent zone and/or a boundary (B) between a uranium adsorption zone and an adjacent oxidizing agent zone, the uranium adsorption zone advancing through the anion exchanger, effecting reduction at the boundary (A) and/or effecting oxidation at the boundary (B), thereby effecting enrichment adjacent said boundary, and separating a fraction enriched in one of said isotopes, the improvement which comprises using as the solvent medium a compositiion comprising (a) a solvent having a dielectric constant of at least 80 at 20° C., (b) hydrochloric acid and (c) at least one of hydrobromic acid and sulfuric acid, the solvent medium having a hydrogen ion concentration of about 0.1 M/l to about 10 M/l, a total chlorine ion concentration of about 0.1 M/l to about 12 M/l, at least one of bromine and sulfate ion being present in about 0.01 M/l to about 10 M/l and the other being present in from zero up to 10 M/l, and passing the materials through the ion exchanger at a rate such that the migration velocity of the uranium adsorption zone through the ion exchanger is at least about 1 cm per minute.

4,368,176

DESULFURIZING ROAST OF PYRITE BEARING POLYMETALLIC RAW MATERIAL

Dzhantore N. Abishev, ulitsa Michurina, 21/3, kv. 44; Evnei A. Buketov, ulitsa Lenina, 56, kv. 3, both of Karaganda; Aigul T. Shindauletova, ulitsa Kirova, 135, kv. 5, Alma-Ata; Nazymkul Baltynova, prospekt Sovetsky, 52-a, kv. 40, Karaganda; Ida N. Babskaya, bulvar Mira, 47, kv. 57, Karaganda; Abubakir K. Kobzhasov, prospekt Sovetsky, 75, kv. 12, Karaganda; Vitaly P. Malyshev, ulitsa Botanicheskaya, 14, kv. 52, Karaganda; Ivan K. Bauer, ulitsa Botanicheskaya, 14, kv. 30, Karaganda; Murat M. Mukhamedinov, rudoupravlenie "Maikainzoloto", Pavlodarskaya oblast, poselok Maikain; Temirkhan A. Kussainov, ulitsa Dzerzhinskogo, 63, Karaganda; Kasken N. Orazalina, ulitsa Dzhambula, 129, kv. 12, Karaganda, and Eslambek A. Buketov, Karagailinsky GOK, poselok Karagaily Karagandinskoi oblasti, all of U.S.S.R.

PCT No. PCT/SU79/00063, § 371 Date Mar. 31, 1981, § 102(e) Date Nov. 24, 1980, PCT Pub. No. WO81/00418, PCT Pub. Date Feb. 19, 1981

PCT Filed Jul. 31, 1979, Ser. No. 224,521

Int. Cl.[3] C22B *1/02*

U.S. Cl. 423—25 5 Claims

3. A method for treating a pyrite bearing polymetallic material comprising ferrous, non-ferrous, rare and noble metals, which comprises: heating said material in a walled vessel without air access at a temperature of about 700° to 800° C. for about 1 to 2 hours; cooling the heated material at a rate of 2 to 4 degrees per minute, thereby effecting a transition of copper sulfides contained in the polymetallic material from cubic diamagnetic chalcopyrite into its tetragonal modification, followed by a two stage magnetic separation, wherein in the first stage iron sulfides are separated at a magnetic field intensity of about 1000 to 2000 oersteds, and in the second stage copper sulfides are separated at a magnetic field intensity of about 4500 to 6000 oersteds.

4,368,177

PROCESS OF PRODUCING QUICKLIME BY CALCINING IN A ROTARY KILN

Wolfram Schnabel, Hattersheim; Gerhard Reuter, München-Aschheim, and Herbert Lausch, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 2, 1981, Ser. No. 250,490

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1980, 3012866

Int. Cl.[3] C01F *11/04, 11/06*

U.S. Cl. 423—175 7 Claims

1. In a process for producing quicklime by a calcining treatment with a hot gas in a rotary kiln, wherein solid carbonaceous fuel for producing hot gas is fed into the charging end of the rotary kiln and an oxygen-containing gas is blown through nozzle blocks into the charge disposed over nozzle blocks in the heating-up zone beginning at the point where ignitable particles of the solid fuel first appear, the improvement wherein:

(a) an oxygen-containing gas is blown through nozzle blocks into the charge disposed over nozzle blocks in that region of the heating-up zone which begins with the appearance of ignitable particles of the solid fuels and which ends where the temperature in the charge does not rise further, said heating-up zone comprising 40–70% of the length of the kiln;

(b) oxygen-containing gases are blown through nozzle blocks into the charge disposed over nozzle blocks in a calcining zone which succeeds said heating-up zone and at such a rate that the temperature in the charge is held constant and for as long as the temperature remains constant, said calcining zone comprising 30 to 60% of the length of the kiln;

(c) oxygen-containing gases are blown into the free kiln space where the kiln atmosphere contains combustible gaseous constituents, and

(d) the rates at which oxygen-containing gases are blown into the free kiln space are so controlled that the exhaust gas is virtually free from combustible gaseous constituents.

4,368,178

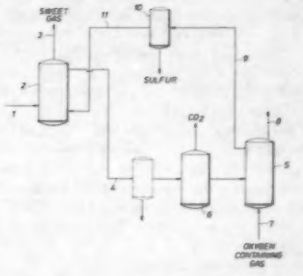
PROCESS FOR THE REMOVAL OF H_2S AND CO_2 FROM GASEOUS STREAMS

Zaida Diaz, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed May 26, 1981, Ser. No. 267,181

Int. Cl.[3] B01D *53/34;* C01B *17/04*

U.S. Cl. 423—226 24 Claims



1. A process for the removal of H_2S and CO_2 from a sour gaseous stream comprising:

(a) contacting the sour gaseous stream in a contact zone with a lean CO_2-selective liquid absorbent mixture comprising diethylene glycol monoethyl ether and an effective amount of the Fe(III) chelate of nitrilotriacetic acid, and producing a sweet gaseous stream and a liquid absorbent admixture containing absorbed CO_2, solid sulfur, and Fe(II) chelate of nitrilotriacetic acid,

(b) removing sulfur from said absorbent admixture, and leaving a solution containing absorbed CO_2 and Fe(II) chelate of nitrilotriacetic acid,

(c) stripping the solution containing absorbed CO_2 and said Fe(II) chelate, and regenerating Fe(III) chelate of nitrilotriacetic acid in said solution with oxygen, producing a lean CO_2-selective absorbent solution containing the Fe-(III) chelate of nitrilotriacetic acid, and

(d) returning lean CO_2-selective absorbent solution containing Fe(III) chelate of nitrilotriacetic acid to the contacting zone.

4,368,179

PROCESS FOR THE OXIDATION OF ALKALI METAL PHOSPHITES

Günther Shimmel; Gero Heymer, both of Erftstadt, and Hasso Scott, Kerpen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 24, 1980, Ser. No. 209,845

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1979, 2948219

Int. Cl.[3] C01B *15/16, 25/26*

U.S. Cl. 423—315 3 Claims

1. A process for oxidizing alkali metal phosphites in the form of solutions or suspensions containing the phosphorus in its trivalent oxidation state, which comprises spray-drying the said solutions or suspensions being essentially free of oxidizing agents other than air at a temperature between 400° and 500° C. in a flame zone within a tower and in the presence of an excess of air, with the resultant formation of trialkali metal phosphate admixed with alkali metal hydroxide as the product, said phos-

phate containing phosphorus in its pentavalent oxidation state, said solutions or suspensions being substantially phosphate free, having an alkali metal:P atomic ratio of at least about 3.5, and containing more than 50% by weight of the phosphorus in its trivalent oxidation state, prior to oxidation.

4,368,180

METHOD FOR PRODUCING POWDER OF α-SILICON NITRIDE

Hiroshi Inoue, Saitama; Katsutoshi Komeya, Kanagawa, and Akihiko Tsuge, Yokohama all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation-in-part of Ser. No. 250,175, Apr. 2, 1981, abandoned, Division of Ser. No. 121,095, Feb. 13, 1980, Pat. No. 4,264,565. This application Aug. 17, 1981, Ser. No. 293,305

Claims priority, application Japan, Feb. 19, 1979, 54-17188

The portion of the term of this patent subsequent to Apr. 28, 1998, has been disclaimed.

Int. Cl.³ C01B *21/068*

U.S. Cl. 423—344 **14 Claims**

1. A method for producing powder of α-silicon nitride which comprises the steps of:

adding 0.1 to 2 parts by weight of carbon and 0.005 to 1 part by weight of at least one silicon compound selected from the group consisting of Si_3N_4, SiC and Si_2ON_2 to 1 part by weight, when converted to SiO_2, of a liquid alkylchlorosilane that forms a precipitate and HCl by hydrolysis which precipitate is convertible to SiO_2 at a baking temperature of 1300° to 1550° C.;

hydrolyzing the resultant mixture;

washing the mixture to separate a solid component; and

baking the solid component at a temperature of 1300° to 1550° C. in an atmosphere mainly consisting of a nitrogen gas or a gas of a nitrogen compound to effect formation of α-silicon nitride.

4,368,181

METHOD OF PRODUCING β-SILICON CARBIDE

Hiroshige Suzuki, 39-9, Kitasenzoku 2-chome, Ota-ku, Tokyo 145, and Teizo Hase, Kawasaki, both of Japan, assignors to Hiroshige Suzuki, Tokyo, Japan

PCT No. PCT/JP80/00305, § 371 Date Aug. 5, 1981, § 102(e) Date Aug. 5, 1981, PCT Pub. No. WO81/01699, PCT Pub. Date Jun. 25, 1981

PCT Filed Dec. 12, 1980, Ser. No. 293,218

Claims priority, application Japan, Dec. 14, 1979, 54/161641

Int. Cl.³ C01B *31/36*

U.S. Cl. 423—345 **4 Claims**

1. A method of producing β-silicon carbide, comprising mixing carbonaceous powder having a particle size of not larger than 60 μm with silica powder having a particle size of not larger than 150 μm in a mixing ratio of the molar ratio of carbon to silica of 3 to produce a raw materiial mixture; heating continuously the raw material mixture in a reaction system having a high temperature zone and a low temperature zone such that the raw material mixture is heated at a low temperature and then at a high temperature in the first half of the reaction and then at a low temperature in the second half of the reaction in this order; condensing silicon monoxide, which is formed together with SiC in the reaction system, in the low temperature zones in the first and second halves in the reaction system to capture and recover the silicon monoxide in the reaction product without escaping of the silicon monoxide from the reaction system; stirring, mixing and pulverizing the recovered product during the reaction or after the reaction to contact again unreacted carbon and silica with the above recovered silicon monoxide and to react them; and repeating the above described operation until the reaction is substantially completed.

4,368,182

CARBON BLACK PRODUCTION

King L. Mills, and Paul J. Cheng, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 15, 1981, Ser. No. 263,949

Int. Cl.³ C01B *31/02*; C09C *1/48*

U.S. Cl. 423—450 **2 Claims**

1. A start-up procedure for a carbon black furnace reactor which yield an effluent and in which a carbon black is produced from a suitable feedstock which comprises admixing a low Btu off-gas having a heating value ranging from about 50 to about 150 Btu/SCF with a high Btu fuel having a heating value of at least about 600 Btu/SCR, injecting the mixture thus obtained along with combustion-supporting air into the combustion section of a precombustion zone of a carbon black furnace and therein creating a vortex flow of hot combustion gases at a temperature of about 2700° to 3000° F. suitable for initiating the production of carbon black, injecting into said vortex flow of hot combustion gases of desired temperature thus produced a carbon black producing feedstock and when said feedstock by partial combustion of the same is maintaining the desired carbon black forming temperature in said zone phasing out or discontinuing the flow of said high Btu fuel in a manner that substantially only the low Btu off-gas is used as fuel gas said combustion supporting air and said low BTU off-gas being indirectly, separately heat exchanged with said effluent.

4,368,183

PROCESS OF PRODUCING CONCENTRATED SULFURIC ACID

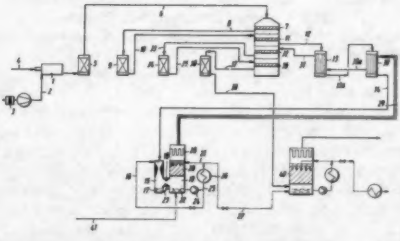
Karl-Heinz Dörr, Mainz; Hugo Grimm, Miltenberg; Ulrich Sander, Friedrichsdorf; Robert Peichl, Kelheim, and Franz Maier, Mark Schwaben, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main and Sudchemie Aktiengesellschaft, Munich, both of, Fed. Rep. of Germany

Filed Nov. 3, 1980, Ser. No. 203,285

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1979, 2945021

Int. Cl.³ C01B *17/82, 17/76*

U.S. Cl. 423—522 **6 Claims**



1. A process for producing concentrated sulfuric acid by a catalytic reaction of SO_2 to SO_3 which consists essentially of:

(a) treating a hot humid SO_2-containing gas in which the H_2O to SO_2 ratio is less than 1 without drying the SO_2-containing gas by a process consisting essentially of feeding it into a first contacting stage containing a catalyst and therein converting SO_2 to SO_3;

(b) withdrawing reaction gas from said first contacting stage whose vapor content is maintained at an H_2O/SO_3 mol ratio below 1;

(c) cooling the reaction gas from the first contacting stage by indirect heat exchange to such an extent that the temperature of the walls of the heat exchanger is above the dew point temperature of the reaction gas;

(d) passing the so-cooled indirect heat exchanged reaction gas for direct heat exchange cooling into a condensing stage

comprising a venturi by passing said reaction gas into said venturi co-currently with sprayed sulfuric acid having a concentration of 98.0 to 100 percent and a temperature of at least 95° C. whereby sulfuric acid vapor is condensed and SO_3 is absorbed;

(e) withdrawing residual unabsorbed SO_3 containing gas from said condensing stage at a temperature at or above 120° C. and up to 170° C.;

(f) passing said residual unabsorbed SO_3 containing gas into a succeeding absorption stage comprising a packing layer and passing said gas upwardly through said packing layer while trickling sulfuric acid having a concentration of 98 to 100 percent and a temperature of 70° to 120° C. through said packing layer;

(g) withdrawing dry, SO_3-free gas from said succeeding absorption stage at or slightly above the temperature of said sulfuric acid fed onto said packing layer;

(h) passing said dry, SO_3-free gas through an indirect heat exchanger whereby to heat the same;

(i) passing the so-heated dry, SO_3-free gas into a second contacting stage containing a catalyst and therein converting SO_2 in said gas to SO_3; and

(j) controlling the concentration of sulfuric acid by a supply of water to the sulfuric acid supplied to the condensation and-/or succeeding absorption stage.

4,368,184

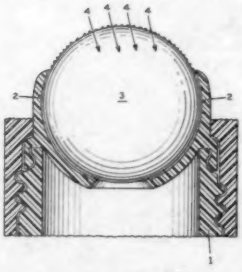
METHOD FOR THE APPLICATION OF ANTIPERSPIRANT POWDER COMPOSITIONS

Jacob Drucker, Holmdel, and Frank Shea, Cranbury, both of N.J., assignors to Carter-Wallace, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 853,097, Nov. 21, 1977, abandoned. This application Jul. 15, 1980, Ser. No. 169,160

Int. Cl.³ A61K *7/34;* **A45D** *33/12*

U.S. Cl. 424—66 **4 Claims**



1. A method for applying loose, free-flowing antiperspirant powder compositions to the skin which comprises dispensing a loose, free-flowing powder from a ball-top container adapted to dispense said loose, free-flowing powder to the body surface by rolling movement of the ball or roller along such surface, wherein said container is a dispenser having an open end, a generally spherical or cylindrical, comparatively rough-surfaced or textured dispensing ball or roller, wherein said surface contains filamentous structures in a density of 1000 to about 4000/in² and from about 0.007 to about 0.01 inches in length, adapted to fit partially within the open end of the container, means for rotatably supporting the ball partially within the open end of the container which cooperates with the dispensing ball or roller to retain it in assembly on the dispenser.

4,368,185

MOLDED, STORAGE STABLE SUPPOSITORY BASE COMPOSITION OF SPECIFIED AMOUNTS OF POLYETHYLENE GLYCOL, FATTY ACID TRIGLYCERIDE AND ALKYLENE OXIDE DERIVATIVE

Mitsuo Mizuno, Yokosuka; Akinori Suginaka, Kamakura; Masahiko Fujii, Tokyo, and Shinichi Akimoto, Machida, all of Japan, assignors to Nippon Oil and Fats Company, Ltd., Tokyo, Japan

Filed Oct. 20, 1980, Ser. No. 198,581

Claims priority, application Japan, Oct. 26, 1979, 54-138562

Int. Cl.³ A61K *9/02, 31/765, 31/75, 47/00*

U.S. Cl. 424—78 **6 Claims**

1. A molded, storage-stable suppository, stable in a temperature range of from 5° C. to 70° C., comprising a composition which is:

about 40% by weight of a polyethylene glycol having an average molecular weight of about 9000;

about 40% by weight of triglycerides of fatty acids comprising alkyl groups which are about 50% by weight of C12, 23 by weight of C14, 14% by weight of C16 and 13% by weight of C18 alkyl groups; and

about 20% by weight of $Y((C_3H_6O)_{35}\ (C_2H_4O)_{100}\ H)_2$ wherein Y is propylene glycol residue.

4,368,186

METHODS AND COMPOSITIONS FOR INTRAVAGINAL CONTRACEPTION

Brian H. Vickery, Cupertino; Shabbir Anik, and Richard E. Jones, both of Palo Alto, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed May 7, 1981, Ser. No. 261,411

Int. Cl.³ A61K *31/74, 31/415*

U.S. Cl. 424—78 **22 Claims**

1. A contraceptive gel composition for intravaginal application, which consists essentially of:

(a) a contraceptively effective amount of a sperm function inhibitor;

(b) between about 10% and 30% by weight of a polyoxyethylene—polyoxypropylene block copolymer, having an average molecular weight between about 5,000 and 15,500; and

(c) water, and, optionally, other non-toxic pharmaceutically acceptable excipients.

4,368,187

SENSITIVE-SKIN CARE REGIME

Merlyn G. Flom, Noblesville; Anne M. Herrold, Brownsburg; Joe O. Martin, Martinsville; Anton A. Mentlik, Noblesville, and Patricia P. Warrick, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 3, 1981, Ser. No. 289,658

Int. Cl.³ A61K *31/78, 47/00*

U.S. Cl. 424—81 **1 Claim**

1. A method of decreasing the sensitivity of sensitive skin without causing skin irritation which comprises applying to the skin in a regime:

(a) a cleanser formulation consisting essentially of, in percent by weight:

Ingredients	Percent
propylene glycol	6.00
magnesium aluminum silicate	1.00
sodium carboxymethyl cellulose	0.10
glyoxyldiureide	0.50
polyoxyethylene (10) soya or tall oil sterols	2.50
polyoxyethylene (3) myristyl ether myristate	15.00
squalane (2,6,10,15,19,23-hexamethyl-tetracosane)	12.00
polydimethylcyclosiloxane	12.00

-continued

Ingredients	Percent
stearyl alcohol (1-octadecanol)	1.50
cetyl alcohol (1-hexadecanol)	3.00
glyceryl monostearate and polyoxyethylene (100) monostearate	2.00
preservative	q.s.
deionized eater	q.s. to 100%

(b) a toner formulation consisting essentially of, in percent by weight:

Ingredients	Percent
polyacrylic acid polymer (Carbopol No. 941)	0.10
glycerin	2.00
glyoxyldiureide 0.30 acetylated polyethylene (10) lanolin alcohol	1.00
cetyl/stearyl 2-ethylhexanoate	1.00
98% triethanolamine	0.10
preservative	q.s.
deionized water	q.s. to 100%

(c) a moisturizer formulation consisting essentially of, in percent by weight:

Ingredients	Percent
polyacrylic acid polymer (Carbopol No. 941)	0.20
glyoxyldiureide	0.50
polyoxyethylene (20) sorbitan fatty acid ester	2.00
cetyl alcohol (1-hexadecanol)	2.00
glyceryl monostearate	1.25
sorbitan trioleate	5.00
polyphenylmethylsiloxane	2.50
2-ethylhexyl p-dimethylaminobenzoate	2.00
lavandin	0.0032
rosemary	0.0066
thyme	0.0102
98% triethanolamine	0.20
squalane (2,6,10,15,19,23-hexamethyl tetracosane)	1.50
avocado oil	2.50
light mineral oil	7.00
di(2-ethylhexyl)adipate	0.625
2-ethylhexyl stearate	1.025
2-ethylhexyl palmitate	0.850
preservative	q.s.
deionized water	q.s. to 100%

and

(d) a cream formulation consisting essentially of, in percent by weight:

Ingredient	Percent
white beeswax	2.00
distilled lanolin alcohols	0.50
white petrolatum	2.00
triglyceryl diisostearate	5.50
squalane (2,6,1,0,15,19,23-hexamethyltetracosane)	5.00
light mineral oil	6.00
isopropyl myristate	5.00
polyethylene homopolymer (1500 m. wt., density 0.91 g/cc)	3.00
polysimethylcyclosiloxane	3.00
quaternary bentonite (Bentone. No. 38)	0.40
70% sorbitol solution	5.00
glyoxydiureide	0.50
preservative	q.s.
deionized water	q.s. to 100%

4,368,188

COSMETIC TONER FORMULATION

Joe O. Martin, Martinsville, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 3, 1981, Ser. No. 289,656
Int. Cl.[3] A61K *31/78, 47/00*
U.S. Cl. 424—81 **1 Claim**

1. A cosmetic toner formulation consisting essentially of, in percent by weight:

Ingredients	Percent
polyacrylic acid polymer (Carbopol No. 941)	0.10
glycerin	2.00
glyoxyldiureide acetylated polyoxyethylene (10) lanolin alcohol	0.30
cetyl/stearyl 2-ethylhexanoate	1.00
98% triethanolamine	1.00
preservative	0.10
deionized water	q.s.
	q.s. to 100%

4,368,189

COSMETIC MOISTURIZER FORMULATION

Anton A. Mentlik, Noblesville, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 3, 1981, Ser. No. 289,655
Int. Cl.[3] A61K *31/78, 7/44*
U.S. Cl. 424—81 **1 Claim**

1. A cosmetic moisturizer formulation consisting essentially of, in percent by weight:

Ingredients	Percent
polyacrylic acid polymer (Carbopol No. 941)	0.20
glyoxyldiureide	0.50
polyoxyethylene (20) sorbitan fatty acid ester	2.00
cetyl alcohol (1-hexadecanol)	2.00
glyceryl monostearate	1.25
sorbitan trioleate	5.00
polyphenylmethylsiloxane	2.50
2-ethylhexyl p-dimethylaminobenzoate	2.00
lavandin	0.0032
rosemary	0.0066
thyme	0.0102
98% triethanolamine	0.20
squalane (2,6,10,15,19,23-hexamethyl tetracosane)	1.50
avocado oil	2.50
light mineral oil	7.00
di(2-ethylhexyl)adipate	0.625
2-ethylhexyl stearate	1.025
2-ethylhexyl palmitate	0.850
preservative	q.s.
deionized water	q.s. to 100%.

4,368,190

IMMUNOLOGICALLY ACTIVE DIPEPTIDYL 4-O-,6-O-ACYL-2-AMINO-2-DEOXY-D-GLUCOSE DERIVATIVES AND METHODS FOR THEIR PREPARATION

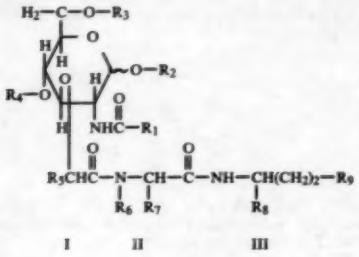
Tsung-Ying Shen, Westfield; Philippe L. Durette, New Providence; Conrad P. Dorn, Jr., Plainfield; James B. Doherty, New Milford, and Richard T. Dean, Fanwood, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 17, 1980, Ser. No. 141,227

Int. Cl.[3] **A61K** *37/02, 39/00;* **C07C** *103/52*

U.S. Cl. 424—88 **34 Claims**

1. Dipeptidyl 4-O, 6-O-2-amino-2-deoxy-D-glucoses of the general structural formula:



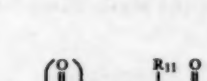
I II III

wherein

R_1 is C_{1-7} alkyl; C_{1-7} alkyl substituted by hydroxy, mercapto, alkoxy of 1–3 carbons, alkyl mercapto of 1–3 carbons, hydroxy or mercapto esterified by an acid of 1–4 carbon atoms, halogen, carboxyl, or carboxyl functionally modified by esterification with a lower alcohol of 1–3 carbons or by amidation; phenyl; or phenyl substituted by one or more alkyl groups of 1–3 carbon atoms or hydroxy or mercapto groups either free or etherified by an alkyl group of 1–3 carbons or esterified by an acid of 1–4 carbons, alkyldioxy of 1–4 carbons, cycloalkyldioxy of 5–7 carbon atoms, amino, or trifluoromethyl;

R_2 is hydrogen; C_{1-7} alkyl; C_{1-7} alkyl substitued by hydroxy, mercapto, alkoxy of 1–3 carbons, alkyl mercapto of 1–3 carbons, hydroxy mercapto esterified by an acid of 1–4 carbon atoms, halogen, carboxyl, or carboxyl functionally modified by esterification with a lower alcohol of 1–3 carbons or by amidation; phenyl; phenyl substituted by one or more alkyl groups of 1–3 carbon atoms or hydroxy or mercapto groups either free or etherified by an alkyl group of 1–3 carbons or esterified by an acid of 1–4 carbons, alkyldioxy of 1–4 carbons, cycloalkyldioxy of 5–7 carbon atoms, amino, or trifluoromethyl; phenyl C_{1-4} alkyl; or phenyl C_{1-4} alkyl substituted by one or more alkyl groups of 1–3 carbon atoms or hydroxy or mercapto groups either free or etherified by an alkyl group of 1–3 carbons or esterified by an acid of 1–4 carbons, alkyldioxy of 1–4 carbons, cycloalkyldioxy of 5–7 carbon atoms, amino, or trifluoromethyl;

R_3 and R_4 may be the same or different and are each independently hydrogen, provided that R_3 and R_4 may not both be hydrogen; or

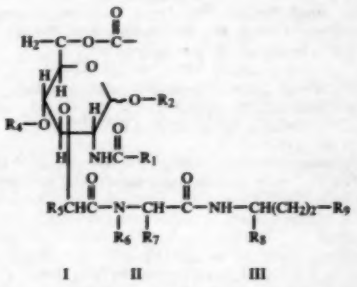


where

X is —O—; —S—; or

R_{10} is hydrogen; C_{1-30} alkyl; C_{2-30} alkenyl; C_{1-30} alkoxy; phenyl; C_{1-20} alkylsulfonyl; or cholesteryl;

R_{11}, R_{12}, R_{14}, and R_{15} may be the same or different and are each independently hydrogen; C_{1-20} alkyl; C_{1-20} alkylcarbonyloxy; amino; benzyl; C_{1-20} alkoxymethyl; C_{1-20} alkylamido; or



I II III

r is 0 or 1; s is 0 or 1; and t is 0 to 20; provided that s may only be 0 when both r and t are greater than 0 or when r is 0 and R_{10} is phenyl; substituted phenyl; 1-adamantyl or heterocycle selected from the group consisting of 2- or 3-furyl, 2- or 3-thienyl, 2- or 3-pyrrolidinyl, 2-, 3- or 4-pyridyl, and 1-tetrazolyl, said heterocycle optionally substituted with C_{1-20} alkyl-carbonyl; and where R_3 or R_4 is other than hydrogen, the other of R_3 or R_4 may additionally be C_{1-4} alkylcarbonyl; provided further that when r and s are each 0 and R_{11} and R_{12} are each hydrogen, R_{10} is not hydrogen or alkyl;

R_5 is hydrogen or C_{1-10} alkyl;

R_6 is hydrogen or R_6 and R_7 taken together are —$(CH_2)_3$—;

R_7 is hydrogen; C_{1-7} alkyl; hydroxymethyl; mercaptomethyl; benzyl; or parahydroxybenzyl;

R_8 and R_9 may be the same or different and are each independently COOR, or CONR'R", where R is hydrogen or C_{1-7} alkyl, and R' and R" are hydrogen or C_{1-3} alkyl; when R_5 is C_{1-10} alkyl, the stereochemistry at asymmetric center I is D or L;

when R7 is other than hydrogen, the stereochemistry at asymmetric center II is L; and the stereochemistry at asymmetric center III is D; and acid addition and quaternary salts thereof.

33. A vaccine against bacterial, viral, or parasitic infections or against various tissue antigens of normal or pathogenic origin comprising a compound of claim **1** in an amount effective to impart an immunostimulatory response.

34. A composition comprising a compound of claim **1** in an amount effective to impart an immunostimulatory response and a physiologically acceptable medium.

4,368,191

VACCINE AND METHOD PROPHYLAXIS AND TREATMENT OF TRICHOPHYTOSIS CAUSED BY PATHOGENIC ORGANISM TRICHOPHYTON MENTAGROPHTYES AND METHOD FOR PREPARING SAME

Arutjun K. Sarkisov, Begovaya alleya, 3, kv. 126, and Lev I. Nikiforov, Semenovsky val, 12, kv. 46, both of Moscow, U.S.S.R.

Filed Jun. 4, 1979, Ser. No. 45,384
Claims priority, application U.S.S.R., Jun. 7, 1978, 2618901; Jun. 7, 1978, 2618902
Int. Cl.[3] A61K *39/00*
U.S. Cl. 424—88 11 Claims

1. A vaccine for prophylaxis and treatment of trichophytosis in fur-bearing animals caused by the pathogenic organism Trichophyton mentagrophytes comprising:

a suspension of microconidia of the strain No. 135/1963 of the Trichophyton mentagrophytes species in a physiological solution with a pH of from 6.2 to 7.0 in an amount of from 15 to 25 min of microconidia per 1 ml of the physiological solution including 8–25 million of viable microconidia.

4,368,192

PEPTIDES

Erich Wünsch, Tutzing, Fed. Rep. of Germany, assignor to Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V., Göttingen, Fed. Rep. of Germany

Filed Apr. 29, 1980, Ser. No. 145,500
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1979, 2917603; Oct. 25, 1979, 2943132
Int. Cl.[3] A61K *37/00*; C07C *103/52*
U.S. Cl. 424—177 4 Claims

1. Pancreozymin-cholecystokinin active nonapeptides having a modified carboxyl terminated sequence of pancreozymin-cholecystokinin 25–33 wherein the modification consists essentially of: the amino acid group 25 selected from arginine, homoarginine, norarginine, N_ϵ, N_ϵ-dialkyllysine, N_δ, N_δ-dialkylornithine, which carries a stability-enhancing strongly basic group; the amino acid group 28 selected from threonine, serine or hydroxy proline, which exhibits a hydrophilic character similar to that of hydroxyamino acid groups; and the amino acid group 31 selected from norleucine, leucine, norvaline or α-amino butyric acid, which exhibits a strongly hydrophobic character similar to that of amino acid groups having an aliphatic side chain, wherein the total polarity character of the resulting peptide provided by amino acid groups 25 and 28 is similar to that of pancreozymin-cholecystokinin.

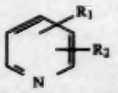
4,368,193

PROCESS FOR TREATING MALARIA

Alexander D. Argoudelis, and David W. Stroman, both of Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Apr. 20, 1981, Ser. No. 255,541
Int. Cl.[3] A61K *31/70*
U.S. Cl. 424—180 31 Claims

1. A process for treating malaria comprising the administration of an effective antimalarial amount of the 3-(5′-ribonucleotide) of a compound having the formula



wherein R_1, which can be singly or multiply substituted in any position of the pyridine ring not already substituted by R_2, is selected from the group consisting of hydrogen, alkyl and substituted alkyl wherein the alkyl portion is from 1 to 8 carbon atoms, inclusive, and isomeric forms thereof, cycloalkyl and substituted cycloalkyl, substituted oxygen, substituted nitrogen, halogen, phenyl, and substituted phenyl, $-(CH_2)_n-OH$, $-(CH_2)_n-NR_4R_5$, and isomeric forms thereof, wherein n is an integer of from 1 to 8, inclusive, R_4 and R_5 are H or alkyl of from 1 to 8 carbon atoms, inclusive, and isomeric forms thereof; wherein R_2, which can be singly substituted in any position of the pyridine ring not already substituted by R_1, is

and X is the amino function of a compound selected from the group consisting of 7(S)-halo-methyl 1-thio-α-lincosaminide and 7(R)-halo-methyl 1-thio-α-lincosaminide; or the pharmaceutically acceptable salts thereof, to a mammal hosting a malarial parasite.

4,368,194

PHARMACOLOGICALLY ACTIVE AMINE BORANES

Bernard F. Spielvogel; Andrew T. McPhail, both of Durham, and Iris H. Hall, Chapel Hill, all of N.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 68,356, Aug. 21, 1979, Pat. No. 4,312,989. This application Jul. 17, 1981, Ser. No. 284,279
Int. Cl.[3] A61U *31/69*
U.S. Cl. 424—185 21 Claims

1. The method of treating an animal which has inflammation in order to inhibit the inflammation process, by administering to said animal a therapeutically effective amount of an amine borane selected from the following:

$$R_3N.BH_2X \qquad I$$

Where X is selected from the group consisting of H, CN, $CONR^1R^2$, COOH, halogen, and $COOR^3$,

R is alkyl having 1 to 4 carbon atoms;

R^1 and R^2 can be the same or different and are H or alkyl; and

R^3 is alkyl;

$$H_3N.BH_2X \text{ or } RNH_2.BH_2X \text{ or } R_2NH.BH_2X \qquad II$$

where X is selected from the group consisting of H, CN, and halogen; and

R is alkyl having 1 to 4 carbon atoms;

$$\text{amine}.BH_2X \qquad III$$

where X is selected from the group consisting of H, CN, and COOH; and

amine is selected from the group consisting of morpholine, N-methylmorpholine, pyridine, and cyanoethyldimethylamine; and

$$(CH_2NY_2.BH_2X)_2 \qquad IV$$

where X is selected from the group consisting of CN, $CONR^1R^2$, and COOH;

R^1 and R^2 can be the same or different and are H or alkyl; and

Y is hydrogen or alkyl having 1 to 4 carbon atoms.

4,368,195

METHOD FOR THE EXTRACTION OF SILYMARIN FROM PLANTS

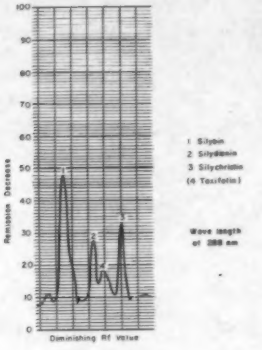
Rolf Madaus, Kön-Brück; Klaus Görler, Bensberg-Refrath, and Werner Molls, Odenthal-Schmeisig, all of Fed. Rep. of Germany, assignors to Dr. Madaus & Co., Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 191,722, Sep. 29, 1980, abandoned. This application May 26, 1981, Ser. No. 267,232

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1979, 2914330

Int. Cl.³ A61K *35/78*

U.S. Cl. 424—195 **4 Claims**



1. An improved method for the extraction of silymarin from the fruits of Silybum marianum, the method being the type wherein a large part of the oil is removed from the fruits by cold pressing, the compressed mass is broken up, and the pressed residue extracted to obtain silymarin, the improvement comprising steps of

extracting the broken up compressed mass with anhydrous ethyl acetate to remove the silymarin therefrom;

evaporating the ethyl acetate to leave a fatted residue;

defatting the residue;

extracting a methanolic solution of the defatted residue with a chlorine-substituted lower alkane, with the addition of water;

extracting the chlorine-substituted solvent with a methanol-water solution;

combining all of the methanolic solutions and evaporating the solvent to leave a product residue;

suspending the product residue in a small amount of methanol; pouring the suspended residue into water;

separating the methanol-water mixture from the material in suspension and drying the material in suspension to yield the desired product.

4,368,196

PHOSPHORIC ACID ESTERS, AND THEIR USE FOR COMBATING PESTS

Karl Kiehs, Lampertheim, and Heinrich Adolphi, Limburgerhof, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

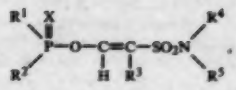
Filed May 29, 1981, Ser. No. 268,378

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1980, 3020897

Int. Cl.³ A01N *43/76, 43/84*; C07F *9/165, 9/65*

U.S. Cl. 424—200 **4 Claims**

1. A phosphoric acid ester of the formula



where R^1 is alkoxy of a maximum of 4 carbon atoms or phenyl, R^2 is alkyl or a maximum of 3 carbon atoms, alkoxy or alkylthio of a maximum of 4 carbon atoms, or alkylamino or dialkylamino, each alkyl being of a maximum of 4 carbon atoms R^3 is methyl, ethyl, hydrogen or chlorine, R^4 and R^5 are phenyl or alkyl of a maximum of 4 carbon atoms, or are, together with the nitrogen atom, a 5- to 7-membered heterocycle selected from the group consisting of pyrrolidine, morpholine, or oxazolidine and X is oxygen or sulfur, with the proviso that R^1 is not phenyl when R^2 is alkyl.

2. A pesticide comprising a pesticidally effective amount of at least one compound as set forth in claim 1 and a solid or liquid carrier.

4,368,197

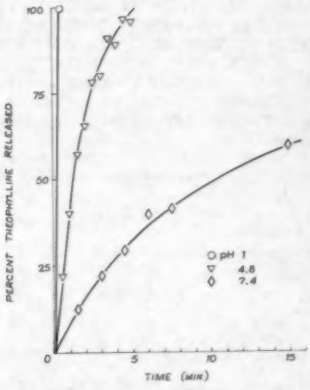
ZINC AMINOPHYLLINE AND ITS USE IN THE TREATMENT OF BRONCHOSPASMS

Eli Shefter, Williamsville; Francis X. Smith, Webster, and Mark J. Gardner, Kenmore, all of N.Y., assignors to Research Corporation, New York, N.Y.

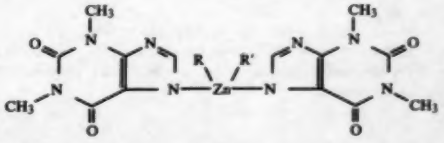
Continuation of Ser. No. 13,266, Feb. 21, 1979, abandoned. This application Nov. 7, 1980, Ser. No. 204,861

Int. Cl.³ A61K *31/555*; C07F *3/06, 9/66*

U.S. Cl. 424—245 **6 Claims**



1. A compound represented by the formula



wherein R and R′ are each a primary monoamine or ammonia or taken together are a lower alkyl primary diamine having from 2 to 6 carbon atoms.

4. A pharmaceutical suspension suitable for oral administration containing an amount of the zinc complex of aminophylline which can be used to effectively treat bronchospasms and pharmaceutically acceptable oral suspension adjuvants and excipients.

4,368,198

CEPHALOSPORINS

Hirotada Yamada; Takenari Nakagome, both of Nishinomiya, and Toshiaki Komatsu, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

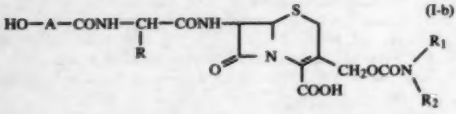
Division of Ser. No. 773,729, Mar. 2, 1977, Pat. No. 4,165,373. This application Mar. 7, 1979, Ser. No. 18,212

Claims priority, application Japan, Mar. 3, 1976, 51-23482; Mar. 3, 1976, 51-23483; Mar. 3, 1976, 51-23484; Mar. 3, 1976, 51-23485

Int. Cl.³ C07D *501/20*; A61K *31/545*

U.S. Cl. 424—246 **25 Claims**

1. A compound of the formula (I-b):



(I-b)

wherein A is a divalent heteroaromatic ring selected from the group consisting of a naphthyridine ring, a pyridopyrimidine ring and a pyridine ring, each of which can be unsubstituted or substituted with a $(C_1–C_4)$alkyl group or a $(C_1–C_4)$alkylthio group; R is a phenyl group which can be unsubstituted or substituted with one or two substituents selected from the group consisting of a hydroxy group, an amino group and a chlorine atom; R_1 and R_2, which can be the same or different, each is a hydrogen atom or a $(C_1–C_4)$alkyl group.

4,368,199

NOVEL DERIVATIVES OF 3,4,5-TRIMETHOXY CINNAMOYL PIPERAZINE, THEIR SALTS, THE PROCESS FOR PREPARING THE SAME AND THEIR APPLICATION IN THERAPEUTICS

Jean-Francois R. Ancher, Rueil Malmaison; Alain P. Lacour, La Varenne; Gerard H. Moinet, Orsay, and Jacky A. Tisne-Versailles, Le Pecq, all of France, assignors to Delalande S.A., Courbevoie, France

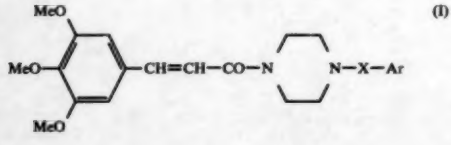
Filed Jan. 16, 1981, Ser. No. 225,588

Claims priority, application France, Jan. 21, 1980, 80 01242; Jan. 7, 1981, 81 00178

Int. Cl.³ C07D *241/02*

U.S. Cl. 424—250 **20 Claims**

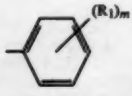
1. A compound having the formula



(I)

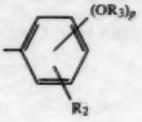
in which

(A) —X— represents either $—(CH_2)_n—$ in which n is 1,2 or 3, or $—CH_2—CO—$, these two chains being bonded to the piperazine nucleus by their respective CH_2 group, and Ar represents:



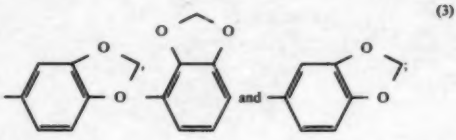
(1)

in which m is 1 or 2, and when m is 1, R_1 is hydrogen, halogen, alkyl, amino, nitro, alkylcarbonylamino, alkylsulfonylamino or alkylaminocarbonylamino wherein the respective alkyls each have from 1 to 5 carbon atoms, and when m is 2, R_1 is hydrogen, halogen or alkyl having from 1 to 5 carbon atoms;

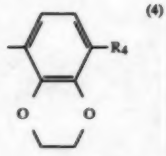


(2)

in which the set (R_2, R_3, p) has any one of the following values: (H,H, 1 or 2), (H, alkyl from 1 to 5 C, 1 or 2), (OH, H, 2), (OH, alkyl from 1 to 5 C, 1 or 2), (alkoxy having 1 to 5 C, H, 2), (alkoxy having 1 to 5 C, alkyl from 1 to 5 C, 2), (H, alkylcarbonyl from 2 to 5 C, 1 or 2);



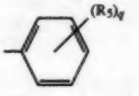
(3)



(4)

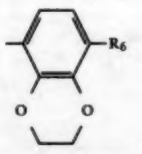
in which R_4 is hydroxy or alkoxy having 1 to 5 carbon atoms; or (5) naphthyl; or

(B) —X— represents $—CH_2—CH_2—CO—$, bonded to the piperazine nucleus by the CH_2 group, and Ar represents:



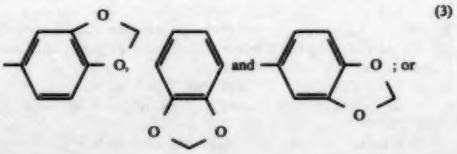
(1)

in which R_5 is hydrogen, chlorine, alkyl having 1 to 5 carbon atoms or an alkoxy having 1 to 5 carbon atoms, and q is 1,2 or 3;



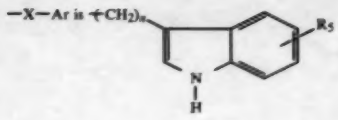
(2)

in which R_6 is alkyl having 1 to 5 carbon atoms or alkoxy having 1 to 5 carbon atoms;



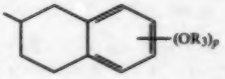
(3)

(4) naphthyl nucleus; or



(C)

in which n and R_5 have the same meanings as defined above, or



in which p is 1 or 2 and R_3 is hydrogen, alkyl group having 1 to 5 carbon atoms or alkylcarbonyl having 2 to 5 carbon atoms, and pharmacologically acceptable salts thereof.

4,368,200

HETEROCYCLIC DERIVATIVES OF (4-PHENYL-PIPERAZINE-1-YL-ARYLOXYMETHYL-1,3-DIOXOLAN-2-YL)-METHYL-1H-IMIDAZOLES AND 1H-1,2,4-TRIAZOLES

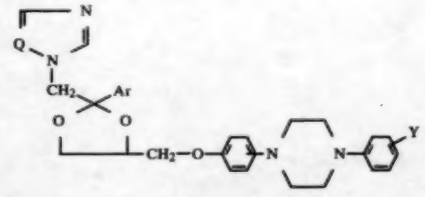
Jan Heeres, Vosselaar, and Leo J. J. Backx, Arendonk, both of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 20,383, Mar. 14, 1979, Pat. No. 4,267,179, which is a continuation-in-part of Ser. No. 919,333, Jun. 23, 1978, abandoned. This application Jan. 14, 1981, Ser. No. 224,992

Int. Cl.[3] **A61K** *31/495;* **C07D** *405/14*

U.S. Cl. 424—250 **7 Claims**

7. A composition for combatting the growth of a microorganism selected from the group consisting of fungus and bacterium comprising an inert carrier material and as an active ingredient an effective antifungal or antibacterial amount of a compound selected from the group consisting of an azole derivative having the formula



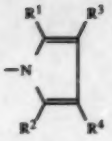
and the pharmaceutically acceptable acid addition salts and stereochemically isomeric forms thereof, wherein:

Q is a member selected from the group consisting of CH and N;

Ar is a member selected from the group consisting of phenyl, thienyl, halothienyl and substituted phenyl, said substituted phenyl having from 1 to 3 substituents each independently selected from the group consisting of halo, lower alkyl, lower alkyloxy and trifluoromethyl; and

the radical Y is a member selected from the group consisting of

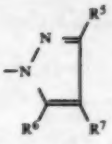
a 1H-pyrrol-1-yl radical of the formula



(a)

wherein R^1, R^2, R^3 and R^4 are each independently selected from the group consisting of hydrogen, lower alkyl, aryl and aryl lower alkyl;

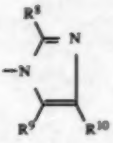
a 1H-pyrazol-1-yl radical of the formula



(b)

wherein R^5, R^6 and R^7 are each independently selected from the group consisting of hydrogen, lower alkyl, aryl and aryl lower alkyl;

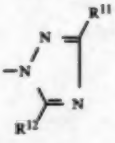
a 1H-imidazol-1-yl radical of the formula



(c)

wherein R^8 is selected from the group consisting of hydrogen, mercapto, lower alkylthio and aryl lower alkylthio, and R^9 and R^{10} are each independently selected from the group consisting of hydrogen, lower alkyl, aryl and aryl lower alkyl;

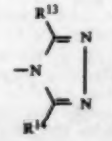
a 1H-1,2,4-triazol-1-yl radical of the formula



(d)

wherein either of R^{11} and R^{12} is selected from the group consisting of hydrogen, hydroxy, mercapto, lower alkylthio and aryl-lower alkylthio, the remaining being selected from the group consisting of hydrogen, lower alkyl and aryl-lower alkyl;

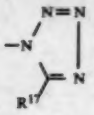
a 4H-1,2,4-triazol-4-yl radical of the formula



(e)

wherein R^{13} is selected from the group consisting of hydrogen, mercapto, hydroxy, lower alkylthio and aryl lower alkylthio, and R^{14} is selected from the group consisting of hydrogen, lower alkyl, aryl and arylllower alkyl;

a 1H-1,2,3,4-tetrazol-1-yl radical of the formula



(g)

wherein R^{17} is selected from the group consisting of hydrogen, mercapto, lower alkyl, aryl and aryl lower alkyl; wherein said aryl as used in the foregoing definition is selected from the group consisting of phenyl and substituted phenyl, said substituted phenyl having from 1 to 3 substituents each independently selected from the group consisting of halo, lower alkyl, lower alkyloxy and trifluoromethyl.

4,368,201

TETRAHYDRONAPHTHOXAZOLES

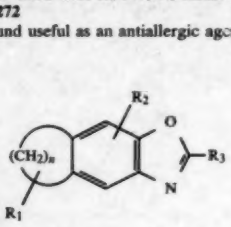
Fu-chih Huang, Boonton, N.J., assignor to USV Pharmaceutical Corporation, Tarrytown, N.Y.

Filed Jul. 20, 1981, Ser. No. 285,216

Int. Cl.³ C07D *263/60, 277/84;* A61K *31/425*

U.S. Cl. 424—272 **12 Claims**

1. A compound useful as an antiallergic agent of the structure



and salts thereof;
wherein
n is 3, 4, or 5
R_1 is hydrogen or C_1–C_6 alkyl,
R_2 is hydrogen, C_1–C_6 alkyl, hydroxyl, C_1–C_6 alkoxy, cyano, phenyl, carboxyl, tetrazole, or halogen,
R_3 is tetrazole, carboxamide or

wherein
Z is oxygen, sulfur, or NH and
R_4 is H, alkali metal, ammonium, C_1–C_6 alkyl, C_1–C_6 alkoxy C_1–C_6 alkyl, C_6 aryl, or C_6 aryl C_1–C_6 alkyl.

4,368,202

COMBATING FUNGI WITH PYRAZOLE-SUBSTITUTED OXIMINO-CYANO-ACETAMIDE DERIVATIVES

Wilhelm Brandes, Leichlingen, and Werner Daum, Krefeld, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

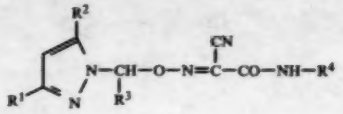
Filed Oct. 20, 1981, Ser. No. 313,110

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1980, 3041998

Int. Cl.³ A01N *43/56;* C07D *231/12*

U.S. Cl. 424—273 P **11 Claims**

1. A pyrazole-substituted oximino-cyano-acetamide derivative of the formula



in which
R^1 and R^2 each independently is hydrogen or alkyl with up to 3 carbon atoms,
R^3 is hydrogen, alkyl with up to 6 carbon atoms or halogenoalkyl with up to 2 carbon atoms and up to 5 halogen atoms,
R^4 is hydrogen or the group CO—NH—R^5, and
R^5 is hydrogen or alkyl with up to 8 carbon atoms optionally substituted by at least one substituent selected from cyano, hydroxy-carbonyl and aminocarbonyl groups and alkoxy-carbonyl groups with up to 4 carbon atoms in the alkyl part.

10. A method of combating fungi or microbes comprising applying to the fungi or microbes, or to a habitat thereof, a fungicidally or microbicidally effective amount of a compound according to claim 1.

4,368,203

ANTIBIOTICS AND DERIVATIVES THEREOF HAVING β-LACTAMASE INHIBITORY ACTIVITY AND PRODUCTION THEREOF

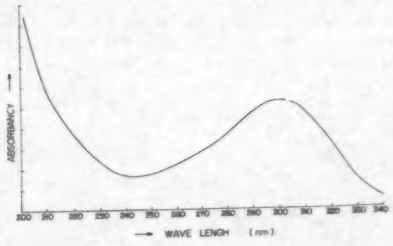
Kazuhiko Okamura, Yamato; Shoji Hirata, Miyagi; Yasushi Okumura; Yasuo Fukagawa, both of Kamakura; Yasutaka Shimauchi, Ninomiya; Tomoyuki Ishikura, Chigasaki; Kageaki Kouno, Tokyo, all of Japan, and Joseph Lein, Fayetteville, N.Y., assignors to Sanraku-Ocean Co., Ltd., Tokyo, Japan

Filed Oct. 10, 1978, Ser. No. 949,854

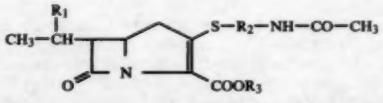
Claims priority, application Japan, Oct. 13, 1977, 52-121857; Dec. 29, 1977, 52-160424

Int. Cl.³ C07D *487/04;* A61K *31/40*

U.S. Cl. 424—274 **9 Claims**



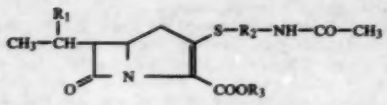
1. A compound of the formula



(I)

wherein R_1 is CH_3 and R_2 is —CH_2—CH_2— or R_1 is H and R_2 is —CH=CH—; and R_3 represents hydrogen, lower alkyl or triphenylmethyl,
or a salt of a compound of formula (I) wherein R_3 is hydrogen.

8. A pharmaceutical preparation having an antimicrobial activity containing an antimicrobially effective amount of a compound of the formula



(I)

wherein R_1 is CH_3 and R_2 is $—CH_2—CH_2—$ or R_1 is H and R_2 is $—CH=CH—$; and R_3 represents hydrogen, lower alkyl or triphenylmethyl,
or a pharmaceutically acceptable salt of a compound of formula (I) wherein R_3 is hydrogen and a pharmaceutically acceptable carrier therefor.

4,368,204

NUTRITION COMPOSITION FOR PEDIATRICS

Hiroshi Sato; Shohei Ogoshi, both of Chiba, and Goro Inoue, Tokushima, all of Japan, assignors to Ajinomoto Company Incorporated, Tokyo, Japan

Filed Feb. 6, 1981, Ser. No. 232,256
Claims priority, application Japan, Feb. 8, 1980, 55-14428
Int. Cl.³ A61K *31/40, 31/195*
U.S. Cl. 424—274 **9 Claims**

1. A nutritional composition comprising: amino acids, wherein the following amino acids are present in the indicated amounts:

Amino Acid	% by Weight of Total Amino Acids
L-isoleucine	4.50 to 6.08
L-leucine	8.70 to 11.78
L-lysine	6.58 to 8.90
L-methionine	1.38 to 1.86
L-cysteine	1.87 to 2.53
L-phenylalanine	2.69 to 3.63
L-tyrosine	3.79 to 5.13
L-threonine	4.30 to 5.82
L-tryptophan	1.62 to 2.19
L-valine	4.65 to 6.29
L-histidine	2.43 to 3.29
L-alanine	8.32 to 11.26
L-arginine	6.00 to 8.12
L-aspartic acid	3.62 to 4.90
L-glutamic acid	6.47 to 8.76
glycine	1.96 to 2.66
L-proline	8.46 to 11.44
L-serine	7.66 to 10.36
Total	100

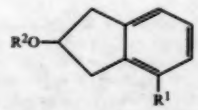
4,368,205

4-HETEROCYCLIC-SUBSTITUTED-2-INDANYL ALCOHOLS AND INSECTICIDAL ESTER DERIVATIVES

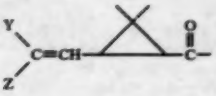
John F. Engel, Medina, N.Y., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 202,813, Oct. 31, 1980, Pat. No. 4,346,251, which is a continuation-in-part of Ser. No. 42,372, May 24, 1979, Pat. No. 4,263,319. This application Sep. 17, 1981, Ser. No. 303,292
Int. Cl.³ A01N *43/36, 43/02;* **C07D** *207/12, 333/24*
U.S. Cl. 424—274 **13 Claims**

1. A compound of the formula



in which R^1 is a heterocyclic radical selected from furanyl, thienyl, pyridyl, pyrimidyl, oxazolyl, pyrrolyl, isoxazolyl, thiazolyl, and isothiazolyl, and R^2 is 2,2,3,3-tetramethylcyclopropanecarbonyl, 1-(4-chlorophenyl)-2-methylpropyl-1-carbonyl, 1-(4-ethoxyphenyl)-2,2-dichlorocyclopropanecarbonyl, or a group of the formula



wherein Y and Z, the same or different, are hydrogen, halogen, lower alkyl, perhalo(lower)alkyl, phenyl which may be substituted with halogen or lower alkyl, or phenylthio which may be substituted with halogen or lower alkyl, with the proviso that one of Y and Z is other than hydrogen.

4,368,206

METHOD FOR TREATING ALCOHOLISM AND ELIMINATING AND PREVENTING ALCOHOL INTOXICATION

Emanuel Revici, 1111 Park Ave., New York, N.Y. 10028

Continuation-in-part of Ser. No. 917,956, Jun. 22, 1978, abandoned, which is a continuation of Ser. No. 724,367, Sep. 17, 1976, abandoned, which is a continuation-in-part of Ser. No. 546,712, Feb. 3, 1975, abandoned, which is a continuation-in-part of Ser. No. 450,169, Mar. 11, 1974, abandoned. This application Dec. 21, 1979, Ser. No. 106,129
Int. Cl.³ A61K *31/23*
U.S. Cl. 424—312 **25 Claims**

1. A method for treating the manifestations of alcoholism or alcohol intoxication by aiding in the control of the craving for alcohol, or by aiding in the control of alcohol withdrawal symptoms, or by aiding in the control of alcohol intoxication in a human, which comprises internally administering to a human in need thereof an oxidized composition produced by the process comprising oxidizing, at a temperature of between about 110° C. and about 150° C., a liquid composition containing at least one fatty acid or fatty ester having allylic unsaturation of the type

$$—CH=CH—CH_2—CH=CH—$$

and/or

$$—CH=CH—CH=CH—CH_2—$$

for a period of time sufficient to produce a peroxide titer substantially greater than the peroxide titer of the liquid composition prior to oxidation, in a non-toxic amount sufficient to aid in the control of the craving for alcohol, or to aid in the control of alcohol withdrawal symptoms, or to aid in the control of alcohol intoxication in said person.

4,368,207

HIGHER ALCOHOL TOXICANTS EFFECTIVE AGAINST INSECTS

Myron J. Lover, Mountainside; Arnold J. Singer, South Orange; Donald M. Lynch, Waldwick, and William E. Rhodes, III, Cranford, all of N.J., assignors to Block Drug Company Inc., Jersey City, N.J.

Continuation of Ser. No. 802,014, May 31, 1977, abandoned. This application Oct. 30, 1978, Ser. No. 955,707
Int. Cl.³ A01N *31/00*
U.S. Cl. 424—343 **19 Claims**

1. A method of controlling mites which comprises applying to a human or animal host in need of such control, an effective toxic amount of at least one monohydric alcohol of 4–18 carbon atoms whose logarithm of the partition coefficient between n-octanol and water (log P) is at least 0.61.

4,368,208

WATER-SOLUBLE CURCUMIN COMPLEX

John L. Schranz, Palos Hills, Ill., assignor to McCormick & Company, Inc., Hunt Valley, Md.

Filed Apr. 13, 1981, Ser. No. 253,731
Int. Cl.³ A23L *1/272, 1/275, 1/04*
U.S. Cl. 426—250 15 Claims

1. A method for preparing a water-soluble curcumin-gelatin coloring agent for foods comprising dissolving a curcumin-containing component and gelatin in a solvent comprising acetic acid, said curcumin-containing component being present in an amount such that the said coloring agent contains a maximum of about 15 weight percent curcumin, on a dry basis, based on the total weight of curcumin and gelatin, said solvent containing a maximum of about 25 weight percent water and said dissolving operation being carried out at a temperature less than the initial denaturing temperature of gelatin in said solvent.

4,368,209

DOUGH MIXING FOR FARINACEOUS FOODSTUFF PRODUCTION

David Tomlinson, Bolton, England, assignor to Tweedy of Burnley Limited, Burnley, England

Filed Mar. 26, 1980, Ser. No. 134,180
Int. Cl.³ A21D *13/08;* A21C *1/00*
U.S. Cl. 426—504 8 Claims

1. A method of mixing dough for use in the production of bread having a specific volume of about 4.5 to 7.0 cubic centimeters per gram and wherein energy added during mixing is sufficient to substantially determine the cell structure of the finished product, the dough, not being a sponge, requiring substantially no fermentation in bulk, comprising the steps of: mechanically mixing the dough in a batch; imparting energy to the dough by said mixing step in a quantity in excess of 15 watt hours per kilogram of total dough ingredients; initiating and completing said mixing step in less than 7 minutes; controlling the temperature rise in the dough resulting from energy input during said mixing step, by passing a fluid coolant through a jacket surrounding the mixing chamber so that the temperature of the dough after mixing is within the range of 25° C. to 35° C.; adding at least one of the ingredients sugar and fat part way through the mixing process but after at least 25% of the total mixing time in the mixing chamber; and carrying out at least part of the mixing under vacuum conditions.

4,368,210

INSTANT-COOKING DRY MACARONI AND LIKE DRY FOODS

Sanpei Murakami, Osaka; Sadao Kokeguchi, Ibaragi; Hiroshi Takahashi, Suita, and Ken Okada, Osaka, all of Japan, assignors to Kanebo Foods, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 3,934, Jan. 16, 1979, Pat. No. 4,423,690. This application Oct. 27, 1980, Ser. No. 201,192
Claims priority, application Japan, Jan. 19, 1978, 53-4865
The portion of the term of this patent subsequent to Jan. 6, 1998, has been disclaimed.
Int. Cl.³ A23L *1/16*
U.S. Cl. 426—557 10 Claims

1. An instant-cooking dry macaroni-type product convertible to a cooked and edible state within a short period of time when immersed in hot water, said product characterized by,

a network of interconnected large-diameter pores communicating between the external surfaces of the product and the internal portions thereof,

consisting essentially of at least one starch-containing component selected from wheat flour or wheat flour mixed with other grain flours, starches or both,

the starch contained therein having an alpha-conversion degree of at least 85% as measured by a diastase enzyme process,

storage stable for a period of at least one year without substantial change in product quality,

discrete, individual macaroni-shaped pieces that are free from substantial portions of the product sticking to adjacent pieces of the product, the product readily converted to a cooked, non-sticky macaroni-shaped type product having good feel, sense and taste when transformed into the edible state.

4,368,211

COMPOSITION FOR AERATED FROZEN DESSERTS CONTAINING UNCOOKED FRUIT PUREE AND METHOD OF PREPARATION

Jon R. Blake, Brooklyn Center; Richard K. Knutson, Corcoran, both of Minn., and Deon L. Strommer, Powell Butte, Oreg., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Nov. 23, 1981, Ser. No. 323,842
Int. Cl.³ A23G *9/02*
U.S. Cl. 426—564 14 Claims

1. A non-dairy composition useful in the preparation of an aerated frozen dessert containing whole fruit puree, comprising:

A. from about 25% to 75% by weight of a puree of whole fruit;

B. from about 12% to 28% by weight of a nutritive carbohydrate sweetening agent;

C. sufficient acid-stable whipping agent to enable aeration of the composition to a density ranging from about 0.2 to 0.95 g./cc.;

D. from about 0.05% to 0.5% by weight of an acid-stable polysaccharide gum;

E. from about 1% to 15% of an edible fatty triglyceride;

F. from about 1% to 15% by weight of a malto dextrin bodying agent; and

G. sufficient water to provide the composition with a moisture content of about 45% to 75%.

4,368,212

PROCESS FOR PRODUCING BLAND-TASTING STARCH

Erwin Heckman, Long Beach, N.Y., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Dec. 16, 1981, Ser. No. 331,400
Int. Cl.³ A23L *1/195, 1/187*
U.S. Cl. 426—579 15 Claims

1. A process for treating starch to remove a cereal or root taste therefrom comprising the steps of stirring a starch having a distinct cereal or root taste in aqueous slurry form with an acid at about pH 3 to 5 for at least about 25 minutes; adding a sufficient amount of an alkaline earth metal oxide to the slurry to bring the pH thereof to 5.5 to 8, and stirring for at least about 15 minutes; filtering the slurry; and drying the resultant treated starch, thereby improving the flavor of said starch.

4,368,213

EMULSION CONCENTRATE FOR PALATABLE POLYESTER BEVERAGE

Edward J. Hollenbach, Brookville, Ind., and Norman B. Howard, Oxford, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 23, 1981, Ser. No. 276,558
Int. Cl.³ A23D *5/00;* A23L *2/00;* A61K *31/225*
U.S. Cl. 426—590 16 Claims

1. A dietary beverage concentrate, comprising an emulsion of:

(a) from about 35% to about 60% of a non-absorbable, non-digestible liquid polyol fatty acid polyester having at least 4 fatty acid ester groups, wherein the polyol is selected from the group consisting of sugars and sugar alcohols containing from 4 to 8 hydroxyl groups and wherein each fatty acid group has from about 8 to about 22 carbon atoms; and

(b) from about 10% to about 50% by weight of the polyol

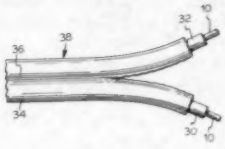
fatty acid polyester of a fatty acid having a melting point of 37° C. or higher, or an ester of such fatty acids;
(c) from about 0.5% to about 3% of a polyglycerol fatty acid emulsifier having an average of from 2 to 10 glycerol units and from 1 to 3 fatty acyl groups of from 14 to 18 carbon atoms per glycerol unit; and
(d) from about 0.5% to about 3% of a fatty acid monoester of an aliphatic diol having from about 3 to about 5 carbon atoms in the diol moiety; and
(e) from about 5% to about 15% of a saccharide; and
(f) the balance comprising water and flavorings.

4,368,214

METHOD AND APPARATUS FOR PRODUCING ELECTRICAL CONDUCTORS

Donald J. Gillette, Guilford, Conn., assignor to Electrostatic Equipment Corp., New Haven, Conn.

Filed Jun. 12, 1981, Ser. No. 273,265
Int. Cl.³ B05D 1/06, 7/20
U.S. Cl. 156—51 **10 Claims**



1. In a method for the production of electrical conductor cable that is adapted for severance along its axis, the steps comprising:
(a) generating a cloud of electrostatically charged particles of a fusible dielectric material;
(b) continuously conveying through or proximate said cloud at least two continuous length conductors along parallel rectilinear paths in closely spaced proximity to one another with a uniform gap therebetween;
(c) maintaining said conductors at an electrical potential effectively opposite to that of said particles to cause said particles to deposit and adhere thereon, the spacing of said conductors and the conditions of coating being such that said particles completely coat said conductors and bridge said gap therebetween; and
(d) fusing and thereafter solidifying said particles to produce a unified exterior coating upon said conductors, including a connecting web portion of reduced cross-section therebetween through which such severance can be effected.

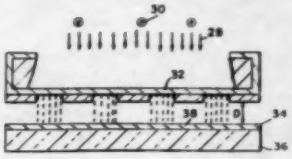
4,368,215

HIGH RESOLUTION MASKING PROCESS FOR MINIMIZING SCATTERING AND LATERAL DEFLECTION IN COLLIMATED ION BEAMS

Robert L. Seliger, Agoura, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 990,449, Apr. 27, 1978, which is a continuation-in-part of Ser. No. 893,649, Apr. 5, 1978, abandoned, which is a division of Ser. No. 794,288, May 5, 1977, Pat. No. 4,101,782, which is a continuation of Ser. No. 626,425, Oct. 28, 1975, abandoned. This application Jan. 21, 1981, Ser. No. 227,029
Int. Cl.³ B05D 3/06
U.S. Cl. 427—38 **2 Claims**

1. A process for projecting an ion beam pattern onto a target layer of ion beam resist while minimizing the scattering and lateral deflection of ion beams defining said pattern, including the steps of:
(a) providing a target layer of ion beam resist material at one chosen location,
(b) providing a single taut hyperthin amorphous membrane of 5000 Angstroms or less in thickness;
(c) providing an ion absorption mask on one surface of said membrane and corresponding to a predetermined pattern in which said ion beam is to be interrupted,
(d) positioning said membrane and said ion absorption mask thereon at a second chosen location remote from the above said target layer of resist and between said target layer of resist and a source of collimated ion beams; and



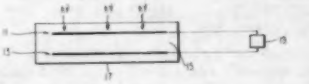
(e) projecting a collimated ion beam toward and substantially perpendicular to the surface of said membrane and through openings therein defined by said ion absorption mask, whereby said thin amorphous membrane introduces a minimum of lateral deflection and scattering into said ion beam relative to its initial direction of motion and thereby enhances the ion beam resolution at said target layer of resist on which said uninterrupted ions impinge.

4,368,216

PROCESS FOR PREPARATION OF SEMICONDUCTOR AND SEMICONDUCTOR PHOTOELECTRODE

Joost Manassen; David Cahen, and Gary Hodes, all of Rehovot, Israel, assignors to Yeda Research and Development Co. Ltd., Rehovot, Israel

Continuation-in-part of Ser. No. 134,665, Mar. 27, 1980, Pat. No. 4,296,188. This application Jul. 30, 1980, Ser. No. 173,814
Claims priority, application Israel, Aug. 8, 1979, 58003
The portion of the term of this patent subsequent to Oct. 20, 1998, has been disclaimed.
Int. Cl.³ B05D 3/02; H01M 6/36
U.S. Cl. 427—74 **26 Claims**



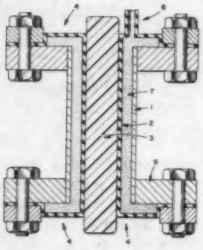
1. A process for forming an electrode for use in a solar cell comprising:
(a) preparing a slurry of at least one semiconductor starting material used to form said semiconductor in powdered form, a flux and a liquid vehicle;
(b) applying a layer of said slurry to an electrically conductive substrate;
(c) annealing said layer to form said semiconductor electrode by treating said layer of step (b) under conditions of temperature and pressure so as to at least partially dissolve at least a portion of one semiconductor material in said flux; and
(d) inserting said semiconductor photoelectrode in said cell.

4,368,217

PROCESS FOR PROVIDING A POLYTETRAFLUOROETHYLENE COATING ON THE WALLS OF A METAL BODY

Claude Tournut, Francheville, France, assignor to Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed May 21, 1981, Ser. No. 265,788
Claims priority, application France, Jun. 6, 1980, 80 12576
Int. Cl.³ B05D 7/22, 3/02, 3/12, 7/24
U.S. Cl. 427—181 5 Claims



1. A process for providing a coating of polytetrafluoroethylene on the inner walls of a hollow metal body comprising filling with polytetrafluoroethylene the space formed between the inner walls of the hollow metal body and the walls of a flexible membrane removably spaced apart therefrom, compressing the polytetrafluoroethylene by deformation of the membrane under isostatic pressure, removing the membrane, filling the internal cavities of the hollow metal body coated with the compressed polytetrafluoroethylene with a substantially incompressible solid substance having fluid flow characteristics and being thermally stable at the temperatures to which the polytetrafluoroethylene is to be heated, and heating the thus-formed assembly to a temperature above the melting point of the polytetrafluoroethylene for a period of time sufficient for the latter to lose its crystallinity.

4,368,218

METHOD OF MAKING EXPANDABLE THERMOPLASTIC POLYMER BEADS

Kenichi Senda, Akashi; Tatehiko Nishida, Himeji, and Masao Nakagawa, Takasago, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 17, 1980, Ser. No. 131,047
Claims priority, application Japan, Mar. 19, 1979, 54-32680
Int. Cl.³ B05D 7/00
U.S. Cl. 427—222 5 Claims

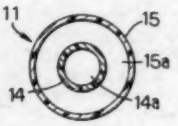
1. A method of producing expandable thermoplastic polymer beads, comprising the steps of suspending grains of a polymer made from one or more kinds of vinyl monomers, a powdered polyolefine resin, one or more kinds of vinyl monomers and a cross-linking agent into an aqueous medium containing a dispersing agent at a first temperature thereby to cause said vinyl monomer to impregnate said polymer and said resin and cause said resin to adhere to the surface of said grains of said polymer, and thereafter at a temperature higher than said first temperature, melting said resin onto the surface of said grain thereby forming a skin thereabout and concurrently polymerizing the resulting dispersin mixture in the presence of an initiator, thereby polymerising said monomer with said resin ins said skin, wherein a foaming agent is added to said dispersin mixture during or after polymerization, or said foaming agent is absorbed into grains of said polymer prior to start of polymerization.

4,368,219

METHOD AND APPARATUS FOR COATING THE INNER SURFACE OF LONG TUBES OF SMALL DIAMETER

Koji Nagata; Kyuji Sudo; Mamoru Nishikawa, and Kikuji Tachibana, all of Nagoya, Japan, assignors to Sumitomo Light Metal Industries Ltd., Tokyo, Japan

Filed Mar. 23, 1981, Ser. No. 246,220
Claims priority, application Japan, Jun. 13, 1980, 55-80674; Jul. 4, 1980, 55-91913
Int. Cl.³ B05D 1/02
U.S. Cl. 427—236 12 Claims



1. In a method of coating the inner surface of a long tube of a small diameter, which comprises initially threading a spray nozzle through said tube from a first open end thereof until said spray nozzle reaches a second open end, and withdrawing said spray nozzle toward said first open end while spraying paint therefrom onto said inner surface, wherein the improvement comprises:

delivering said paint and pressurized air to said spray nozzle through respective passages of a plurality of mutually independent axial passages defined by a relatively non-elastic outer tube and at least one inner tube concentrically or eccentrically received within said outer tube whereby one said at least one inner tube is interposed between a paint conveying axial passage and a pressurized air conveying passage, said at least one inner tube and said outer tube constituting in combination a multi-tubing supplying hose connected at one end thereof to said spray nozzle, said pressurized air being at an operating pressure greater than that of said paint, one of said at least one inner tube which is interposed between a paint conveying passage and a pressurized air conveying passage of said plurality of axial passages being less rigid than said outer tube and made of elastic material whereby under operating conditions of said supplying hose said paint conveying passage is radially contracted into a smaller volume due to elastic deformation of said elastic material; and

upon termination of delivery of said pressurized air, drawing said paint out of said spray nozzle by means of expansion of said paint conveying passage into an original larger volume, thereby preventing said paint from dripping from said spray nozzle.

4,368,220

PASSIVATION OF RIE PATTERNED AL-BASED ALLOY FILMS BY ETCHING TO REMOVE CONTAMINANTS AND SURFACE OXIDE FOLLOWED BY OXIDATION

Jerome M. Eldridge, Saratoga; Michael H. Lee, San Jose, both of Calif., and Geraldine C. Schwartz, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

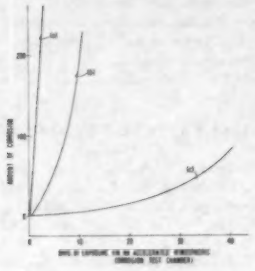
Filed Jun. 30, 1981, Ser. No. 278,949
Int. Cl.³ H01L 21/283, 21/306
U.S. Cl. 427—255.4 5 Claims

1. A process for passivating a reactive ion etched aluminum based metallization patterned layer, said layer having an air-formed oxide portion, comprising the steps of:

etching surface portions of said metallization layer with a phosphoric-chromic etchant solution to completely strip the oxide portion as well as a relatively small amount of the underlying aluminum patterned layer so as to remove substantially all contaminants; and

oxidizing the exposed surface of said layer in an oxygen atmosphere.

5. A process according to claim 1, including the further steps, following the etching step and prior to the oxidizing step, of:



rinsing the etched surface portions in deionized water at room temperature and then,

drying the etched portions in filtered air or nitrogen at elevated temperature.

4,368,221

PROCESS FOR COATING FIBROUS GLASS WITH AMORPHOUS NICKEL PHOSPHOROUS GLASS METAL

Mihaly Stefan; Zoltan Hegediis; Terezia Bagi nee Schmidt, all of Budapest; Henrik Dörner; Miklos Kanyo, both of Kecskemet, and Pal Füzesi, Budapest, all of Hungary, assignors to Bacs Megyei Allami Epitöipari Vallalat, Kecskemet and Csepel Müvek Tervezö es Kutato Intezete, Budapest, both of, Hungary

Filed Jun. 29, 1981, Ser. No. 278,608

Claims priority, application Hungary, Jul. 4, 1980, 1677/80

Int. Cl.³ C23C *3/02*

U.S. Cl. 427—305 **9 Claims**

1. A process for coating on a fibrous glass substrate an amorphous glass metal coating consisting essentially of nickel-phosphorus, under conditions free of current, which comprises treating the fibrous glass substrate with an aliphatic alcohol having 1 to 4 carbon atoms, and subsequently with an aqueous solution of Sn Cl_2, in the presence of hydrochloric acid, activating said substrate with a solution of palladium chloride in aqueous hydrochloric acid and keeping it in a bath comprising, as a nickel containing component, nickel ammonium sulfate or a mixture of nickel sulfate and nickel ammonium sulfate, in combination with sodium hypophosphite, an alkali metal salt of at least one organic acid having a low molecular weight, a mineral acid, in an amount sufficient to adjust the pH to 3 to 4, and optionally one or more organic or inorganic metal-deposition regulating agents, at a temperature between 55 degrees Celsius and 70 degrees Celsius.

4,368,222

VAPOR PERMEATION CURABLE COATINGS FOR SURFACE-POROUS SUBSTRATES

James R. Biegen, Worthington, Ohio; Helmut H. Zapfe, Mississauga, Canada, and Eugene L. Bulgozdy, Dublin, Ohio, assignors to Ashland Oil, Inc., Dublin, Ohio

Filed Jun. 5, 1981, Ser. No. 270,896

Int. Cl.³ B05D *3/04*

U.S. Cl. 427—340 **22 Claims**

1. In a method for coating a surface-porous substrate of a fibrous-reinforced molding compound with a film of a curable primer coating composition and curing said film, the improvement which comprises:

(A) applying said film of said coating composition to said substrate, said coating composition comprising:

(1) an aromatic-hydroxyl functional compound; and

(2) a multi-isocyanate curing agent; and

(B) exposing said coated substrate to a vaporous tertiary amine catalyst to rapidly cure said applied film at room temperature,

said vaporous catalyst cured film being substantially free of surface imperfections.

4,368,223

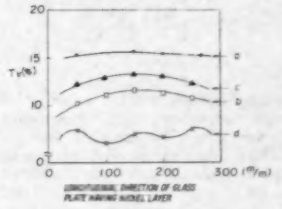
PROCESS FOR PREPARING NICKEL LAYER

Takayuki Kobayashi, and Ryo Tamamura, both of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Jun. 1, 1981, Ser. No. 268,837

Int. Cl.³ C23C *3/02*

U.S. Cl. 427—443.1 **9 Claims**



1. In a process for preparing a transparent nickel layer by applying a solution containing a nickel salt and a reducing agent for the reduction of said nickel salt onto a substrate and reducing the nickel salt by a chemical reaction, the improvement comprising:

conducting said chemical reduction with a solution containing from 0.02 to 20 wt % of diethylenetriamine or imidazole based on the amount of said nickel salt which enhances the visible and solar energy transmissivity values of the transparent layer.

4,368,224

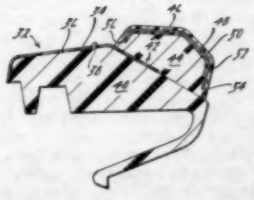
DECORATIVE MOLDING WITH METALLIC APPEARANCE

Norman C. Jackson, Livonia, Mich., assignor to The Standard Products Company, Cleveland, Ohio

Continuation of Ser. No. 11,083, Feb. 12, 1979, abandoned. This application Apr. 28, 1980, Ser. No. 144,367

Int. Cl.³ B32B *3/30, 7/02*

U.S. Cl. 428—31 **17 Claims**



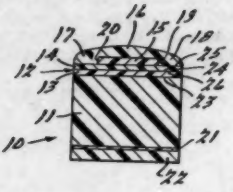
7. A decorative and protective molding comprising an extruded elongated body characterized by an irregularly shaped, complex cross-section having at least one channel therein, an elongated, thin layer of extruded, homogeneous, flaked metallic pigment-containing thermoplastic material laminated onto said body, an elongated rigde laminated onto said layer of thermoplastic material, and an elongated reflective, decorative layer laminated onto said ridge.

4,368,225

MOLDING LAMINATE

Joel H. Nussbaum, Farmington Hills, Mich., assignor to The Standard Products Co., Cleveland, Ohio

Filed Apr. 3, 1981, Ser. No. 250,879
The portion of the term of this patent subsequent to Sep. 14, 1999, has been disclaimed.
Int. Cl.³ B32B 31/30; B60R 13/04
U.S. Cl. 428—31 8 Claims



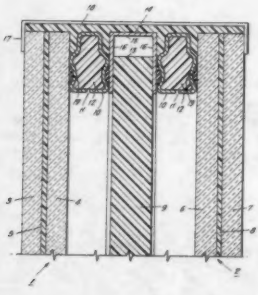
1. A laminate construction having an extruded body comprising a first extruded thermoplastic; an outer layer of second extruded thermoplastic incompatible with said first thermoplastic; and a tie sheet sandwiched between and laminated to each of said body and said outer layer; said tie sheet comprising an adhesively secured laminate of a first layer and a second layer, said first layer being heat laminated to said body and comprising a first material compatible with said first thermoplastic, and said second layer being heat laminated to said outer layer and comprising a second material compatible with said second thermoplastic.

4,368,226

GLASS UNITS

Gasper Mucaria, 1577 E. 21 St., Brooklyn, N.Y. 11210

Filed Aug. 13, 1980, Ser. No. 177,590
Int. Cl.³ E06B 3/24
U.S. Cl. 428—34 5 Claims



1. A glass unit, comprising in combination, first and second sheets of glass, a polycarbonate sheet between said first and second sheets of glass disposed such that each lateral face thereof is substantially parallel to the lateral face of the adjacent first or second glass sheet; means for spacing apart the respective opposing faces of said polycarbonate sheet and said first and second sheets of glass; a substantially u-shaped capping channel comprising a substantially flat base and two flat lateral walls straddling the marginal edge of said polycarbonate sheet each of said lateral walls partially contacting one face of said polycarbonate sheet; the marginal edge of said polycarbanate sheet being spaced apart from said flat base by a given dimension, each of said lateral walls completely contacting one face of said polycarbonate sheet other than in the area of the space formed between said flat base and said marginal edge of said polycarbonate sheet, said means for spacing apart the respective opposing faces of said polycarbonate sheet and said first and second sheets of glass being located in the area of said u-shaped capping channel, said spacing means having hollowed out interiors which communicate with the area between the polycarbonate sheet and adjacent glass sheets by means of a channel, said hollowed out interiors being packed with a dessicant; and framing means for maintaining the spatial relationships of said first and second glass sheets and polycarbonate sheet substantially constant.

4,368,227

SUEDE-LIKE SHEET MATERIALS OF ULTRAFINE FIBERS

Takashi Setsuie; Koji Mimura, both of Otake, and Kiyonobu Okamura, Hiroshima, all of Japan, assignors to Mitsubishi Rayon Company, Limited, Tokyo, Japan

Continuation of Ser. No. 931,516, Aug. 7, 1978, abandoned, which is a division of Ser. No. 813,354, Jul. 6, 1977, Pat. No. 4,147,574. This application Apr. 4, 1980, Ser. No. 137,431
Claims priority, application Japan, Jul. 12, 1976, 51-82660
Int. Cl.³ B32B 33/00
U.S. Cl. 428—91 12 Claims

12. A suede-like sheet material having a thickness and specific volume of 0.4 to 1.0 mm and 2.0 to 3.5 cm^2/g respectively, comprising: forming a composite layer material by depositing a web consisting of ultrafine fibers of less than 0.5 denier per filament on a base cloth of a knitted fabric or a woven fabric; expelling a fine liquid stream jet under high pressure onto the surface of the ultrafine fiber web thereby substantially integrating ultrafine fibers with the base cloth; and then impregnating the sheet with an elastic polymer in an amount less than 50% based on the total weight of the base cloth and ultrafine fibers.

4,368,228

BITUMEN, ATACTIC POLYPROPYLENE & PROPYLENE/ETHYLENE COPOLYMER COMPOSITIONS AND WATERPROOFING MEMBRANES USING THE SAME

Romolo Gorgati, Bologna, Italy, assignor to Derbigum America Corporation, Kansas City, Mo.

Continuation-in-part of Ser. No. 143,138, Apr. 23, 1980, abandoned. This application Jun. 12, 1981, Ser. No. 273,212
Int. Cl.³ B32B 5/12
U.S. Cl. 428—110 15 Claims

1. A prefabricated waterproofing membrane which comprises a series of superposed reinforcing layers including a fiberglass mat, a polyester mat and a fiberglass net, said layers being impregnated with bitumen mixed with at least one thermoplastic polymer selected from the group consisting of an amorphous copolymer of ethylene/propylene, atactic polypropylene, polyisobutylene and styrene-butadiene-styrene block copolymer, the bitumen polymer mixture having a ring and ball softening point of at least 105° C.

4,368,229

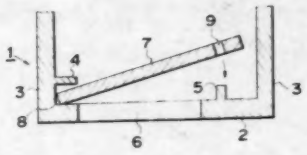
INDICATOR PANEL FIXING ARRANGEMENT

Shoji Ariga, Toda, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Mar. 3, 1981, Ser. No. 239,951
Claims priority, application Japan, Mar. 10, 1980, 55-31561[U]
Int. Cl.³ G12B 9/10; E04C 2/38
U.S. Cl. 428—120 4 Claims

1. An indicator panel fixing arrangement comprising:
an elongated indicator panel having a flat lower surface, said indicator panel having an aperture therethrough at a position near to one end thereof;
a body member supporting said indicator panel, said body member including a base wall portion having a flat upper surface against which rests the flat lower surface of said

indicator panel, said base wall portion of said body member having an elongated through opening located between its ends, said through opening defining a window through which said indicator panel is visible, said body member having two sidewalls extending upwardly from said flat upper surface of said base wall portion at the opposite ends thereof, one of said sidewalls having a first guide member extending laterally inwardly from its inner surface, between its upper and lower ends, at a location close to and spaced upwardly from said flat upper surface of



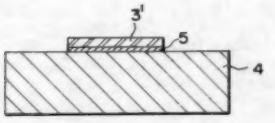
said base wall portion and defining therewith a groove, the other end of said indicator panel being inserted in said groove between said first guide member and said flat upper surface of said base wall portion, a second guide member extending upwardly from said flat upper surface of said base wall portion at a location on the opposite end of said through opening from said first guide member, said second guide member being received in said aperture so that said indicator panel is accurately positioned on said body member.

4,368,230

PHOTOMASK

Koichiro Mizukami, and Masatoshi Migitaka, both of Kokubunji, Japan, assignors to VLSI Technology Research Association, Japan

Filed Mar. 5, 1980, Ser. No. 127,319
Claims priority, application Japan, Mar. 28, 1979, 54-35492
Int. Cl.³ B32B *3/00*
U.S. Cl. 428—203 **13 Claims**



1. A photomask suitable for inspecting a pattern formed thereon with electron beams comprising:

a transparent substrate comprised of glass;

a transparent electrically conductive film comprised of metal oxide formed of at least one first metallic element; and

a light shielding film of predetermined pattern provided on said transparent electrically conductive film, said pattern film being comprised of at least one material selected from the group consisting of a second metallic element having an atomic number not smaller than 25 and a composition containing said second metallic element, said first and second metallic elements being different from each other and the ratio of the electron backscattering coefficient of said pattern film to that of said transparent electrically conductive film being equal to or larger than about 1.3

4,368,231

LAMINATED PLASTIC, ITS PRODUCTION AND ITS USE

Karl-Heinz Egert, Hamburg; Joachim Wank, Dormagen-Zons, and Eckart Reese, Dormagen, all of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschrankter Haftung, Munich and Bayer Aktiengesellschaft-Bayerwerk, Leverkusen, both of, Fed. Rep. of Germany

Filed Mar. 6, 1981, Ser. No. 241,366
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1980, 3010143
Int. Cl.³ B32B *27/00*; C09J *3/12*
U.S. Cl. 428—220 **12 Claims**

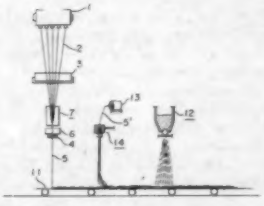
1. A laminated plastic sheet having a thickness of 0.05 to 5 mm comprising a layer of a film of aromatic thermoplastic polycarbonate or thermoplastic polyarylsulfone, a layer of a film of a thermoplastic copolymer of 40 to 60 mol % of ethylene, 60 to 40 mol % of tetrafluoroethylene and from 0 to 10 mol %, based on 100 mol % of the sum of ethylene and tetrafluoroethylene, of a completely or partially fluorinated vinyl alkyl ether or of a completely or partially fluorinated vinylalkane, and a layer of a polyurethane adhesive between said film layers to secure the film layers to one another.

4,368,232

GLASS FIBER MAT AND METHOD OF PREPARATION THEREOF

Masayoshi Morioka, Satte, and Sadao Kawashima, Sohwa, both of Japan, assignors to Asahi Fiber Glass Company Limited, Chiyoda, Japan

Filed May 22, 1980, Ser. No. 152,352
Claims priority, application Japan, Jun. 26, 1979, 54-79693
Int. Cl.³ B32B *17/04*
U.S. Cl. 428—228 **8 Claims**



1. A process for preparing a glass fiber mat for fiber reinforced plastic material which comprises:

(a) applying a size to a large number of glass fibers drawn from bushings and collecting the glass fibers into a strand;

(b) bringing the strand from (a) into contact with the surface of a rotating cylinder to throw and pile it as a layer on a moving conveyor in a non-oriented state;

(c) drying by heat another strand which is wound as a cake; and

(d) drawing the dried strand from (c) to pile it in a non-oriented state as a thin layer on the layer obtained in (b).

4,368,233

COATED WOVEN AND NON-WOVEN POLYOLEFIN ARTICLES

Edward Barkis; Robert R. Crummer, both of Marietta, and James M. Joyner, East Point, all of Ga., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 62,774, Aug. 1, 1979, Pat. No. 4,255,323, which is a division of Ser. No. 671,068, Mar. 29, 1976, Pat. No. 4,211,692. This application Oct. 6, 1980, Ser. No. 194,475
Int. Cl.³ B32B *7/00*
U.S. Cl. 428—245 **10 Claims**

1. A coated article comprising a substrate selected from the group consisting of woven and nonwoven polyolefin sub-

strates and a coating composition selected from the group consisting of:

(1) a composition with a shear independent melt viscosity at 190° C. of above about 2.9×10^6 centipoise comprising:

(a) about 50–90% by weight of a terpolymer containing reacted ethylene, propylene, and a diene, said terpolymer having a flow rate in the range of about 0.5–1.0 g/10 min., wherein the diene is in a low concentration up to a maximum concentration in percent by weight of about 3% and is a monomer selected from the group consisting of 1,3-butadiene, isoprene, chloroprene, cyclooctadiene-1,5, dicyclopentadiene cyclododecatriene-1,5,9, cyclododecadiene-1,7, cycloheptadiene-1,4, cyclohexadiene-1,4, norbornadiene, methylene-norbornene, methyltetrahydroindene, dimethyl-tetrahydroindene, 6-methylheptadiene-1,5, hexadiene-1,4, 6-methyl-4,7,8,9-tetrahydroindene, and ethylidene-norbornene, and wherein the reacted ethylene and propylene are in a ratio by weight of about 3:1;

(b) about 50–10% by weight of a high density polyethylene having a flow rate of about 0.2–30 g/10 min., an unannealed density in the range of about 0.956–0.965, and a weight average molecular weight in a range of about 50,000–200,000;

(c) about 0.5–5% by weight of an opacifier;

(d) about 0.5–15% by weight of a fire retardant composition comprising at least one polyhalogenated organic compound and antimony trioxide;

(e) about 0.5–3% by weight of an ultraviolet light stabilizer for polyolefins;

(2) a composition having a shear independent melt viscosity at 190° C. of above about 660,000 centipoise comprising:

(a) about 30–50% by weight of an ethylene-isobutylacrylate copolymer having a flow rate in the range of about 50–90 g/10 min., a density at 23° C. in the range of about 0.920–0.930, and comprising about 30% by weight of reacted isobutylacrylate;

(b) about 10–40% by weight of a terpolymer containing reacted ethylene, propylene, and a diene, said terpolymer having a flow rate in the range of about 0.5–1.0 g/10 min., wherein the diene is in a low concentration up to a maximum concentration in percent by weight of about 3% and is a monomer selected from the group consisting of 1,3-butadiene, isoprene, chloroprene, cyclooctadiene-1,5, dicyclopentadiene, cyclododecatriene-1,5,9, cyclododecadiene-1,7, cycloheptadiene-1,4, cyclohexadiene-1,4, norbornadiene, methylene-norbornene, methyltetrahydroindene, dimethyl-tetrahydroindene, 6-methylheptadiene-1,5, hexadiene-1,4, 6-methyl-4,7,8,9-tetrahydroindene, and ethylidene-norbornene, and wherein the reacted ethylene and propylene are in a ratio by weight of about 3:1;

(c) about 10–40% by weight of a high density polyethylene having a flow rate in the range of about 0.2–30 g/10 min., an unannealed density in the range of about 0.956–0.965, and a weight average molecular weight in a range of about 50,000–200,000;

(d) about 0.5–5% by weight of an opacifier;

(e) about 0.5–15% by weight of a fire retardant composition comprising at least one polyhalogenated organic compound and antimony trioxide;

(f) about 0.5—3% by weight of an ultraviolet light stabilizer; and

(3) a composition having a shear independent melt viscosity at 190° C. of above about 380,000 centipoise comprising:

(a) about 30–75% by weight of an olefin polymer blend containing about 40–99% by weight of an ethylene-propylene block copolymer comprising at least about 80% by weight of polymerized propylene said copolymer having a flow rate of about 15–100 dg/min. and about 1–60% by weight of polyethylene having a melt index recovery of at least about 50 and a density greater than about 0.912; and

(b) about 70–25% by weight of an ethylene-isobutylacrylate copolymer having a flow rate in the range of about 50–90 g/10 min., a density at 23° C. in the range of about 0.920–0.930, and comprising about 30% by weight of reacted isobutylacrylate.

4,368,234

WOVEN MATERIAL AND LAYERED ASSEMBLY THEREOF

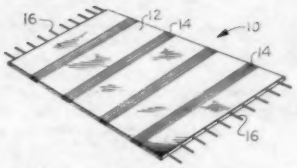
Raymond J. Palmer, Newport Beach, Calif., and Dominique Micheaux, Villette d'Anthon, France, assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Dec. 17, 1980, Ser. No. 217,424

Claims priority, application France, Dec. 21, 1979, 79 32135

Int. Cl.³ B32B *7/00*

U.S. Cl. 428—245 **29 Claims**



1. A woven reinforcement material adapted to be formed into layers for producing damage tolerant structural components, which comprises woven alternate strips each formed of a plurality of high modulus fibers and additional strips each formed of a plurality of low modulus fibers, said strips extending in at least one direction in the woven material, the strips of low modulus fibers having a width different from the width of the strips of high modulus fibers.

4,368,235

SILICONE RESIN COATING COMPOSITION

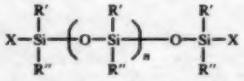
Howard A. Vaughn, Jr., Schenectady, N.Y., assignor to General Electric Co., Waterford, N.Y.

Division of Ser. No. 113,278, Jan. 18, 1980, Pat. No. 4,324,712, which is a continuation-in-part of Ser. No. 964,910, Nov. 30, 1978. This application Sep. 25, 1981, Ser. No. 305,903

Int. Cl.³ B32B *15/08, 27/08, 27/18, 27/20*

U.S. Cl. 428—412 **12 Claims**

1. A solid substrate having at least one surface coated with an aqueous coating composition comprising a mixture of colloidal silica, a lower aliphatic alcohol-water solution of the partial condensate of a silanol of the formula R $Si(OH)_3$ wherein R is selected from the group consisting of alkyl having from 1 to 3 carbon atoms and aryl, and a flexibilizing amount of a linear functionally terminated oligosiloxane having the general formula,



wherein X is selected from the group consisting of hydroxy, alkoxy and

wherein Y is hydrogen or alkyl, R′ and R″ may be the same or different and are selected from the group consisting of alkyl, haloalkyl, cyanoalkyl and alkenyl and n is a number from about 1 to 18, at least 70 weight percent of the silanol being CH_3 $Si(OH)_3$, said composition containing 10 to 50 weight percent solids consisting essentially of 10 to 70 weight percent colloidal

silica, 30 to 90 weight percent of the partial condensate, and 0.5 to 5 weight percent of said linear functionally terminated oligosiloxane, said composition having a pH of 7.1 to about 7.8.

4,368,236

SILICONE RESIN COATING COMPOSITIONS

Robert B. Frye, Menands, N.Y., assignor to General Electric Co., Waterford, N.Y.

Division of Ser. No. 91,716, Nov. 6, 1979, Pat. No. 4,299,746, which is a continuation-in-part of Ser. No. 964,911, Nov. 30, 1978, Pat. No. 4,277,287. This application Jul. 16, 1981, Ser. No. 283,832

Int. Cl.³ B32B *27/36*

U.S. Cl. 428—412 **11 Claims**

1. A solid substrate having at least one surface coated with an aqueous coating composition comprising in intimate admixture:

(a) a dispersion of colloidal silica in a lower aliphatic alcohol-water solution of the partial condensate of a silanol of the formula $RSi(OH)_3$, wherein R is selected from the group consisting of alkyl having from 1 to 3 carbon atoms and aryl, wherein at least 70 weight percent of the silanol is $CH_3Si(OH)_3$; and

(b) a small amount of an ultraviolet light absorbing compound, said composition containing 10 to 50 weight percent solids, said solids consisting essentially of 10 to 70 weight percent colloidal silica and 30 to 90 weight percent of the partial condensate, and wherein said composition has a pH of from 6.8 to 7.8.

4,368,237

PROCESS FOR PRODUCING MAGNETIC RECORDING DEVICE

Yasuyuki Yamada; Tatsuji Kitamoto, and Goro Akashi, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

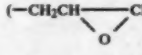
Continuation of Ser. No. 838,790, Sep. 28, 1977, abandoned, and a continuation of Ser. No. 700,369, Jun. 28, 1976, abandoned. This application May 14, 1979, Ser. No. 38,620

Claims priority, application Japan, Jun. 26, 1975, 50/79655

Int. Cl.³ H01F *10/02*

U.S. Cl. 428—413 **20 Claims**

1. A process for producing a magnetic recording material, which comprises separately emulsifying in water at least two components capable of reacting with each other upon mixing, to form at least two separate emulsions, combining the resulting emulsions while maintaining said at least two components in the separated state, coating a magnetic coating composition consisting essentially of a ferromagnetic fine powder, a binder consisting of said at least two components in said combined emulsion, and a coating liquid on a non-magnetic support, drying the coating to form a magnetic recording layer, and curing the resulting magnetic recording layer if drying is insufficient to effect curing thereof, wherein said at least two components contain reactive groups selected from the group consisting of hydroxyl (—OH), carboxyl (—COOH), epoxy



carbonyl (C=O), amino ($—NH_2$), isocyanate (—NCO), or thiocyanate (—NCS), and wherein the molar ratio of reactive groups to react with one another is about 35/65. to 65/35, the amount of binder in the coating composition is 10–70% by weight, as solids content, and is 17–100 parts by weight per 100 parts by weight of the ferromagnetic fine powder.

4,368,238

MAGNETIC RECORDING MEDIA

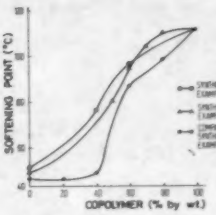
Masashi Somezawa, Sendai; Yoshinobu Ninomiya, Miyagi, and Akira Hashimoto, Tagajyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 24, 1981, Ser. No. 334,255

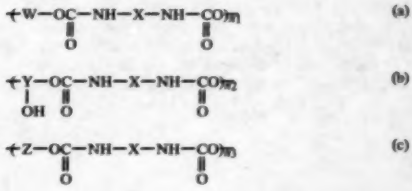
Claims priority, application Japan, Dec. 29, 1980, 55/188035

Int. Cl.³ H01F *10/02*

U.S. Cl. 428—413 **54 Claims**



1. A magnetic recording medium comprising a non-magnetic supporting material, magnetic or magnetizable particles or powders, and a thermoplastic polyurethane resin comprising a combination of units represented by formulas (I):



wherein

W is a residue derived by the elimination of the two hydroxyl groups from a long chain diol (A) having a molecular weight in a range of about 500 to 3,000;

X is a residue derived by the elimination of the two isocyanate groups from an organic isocyanate (C);

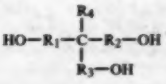
Y is a residue derived by the elimination of the two hydroxyl groups from the short chain triol (D) having a molecular weight in a range lower than about 500;

Z is a residue derived by a elimination of the two hydroxyl groups from the short chain diol (B) having a molecular weight in a range of about 50 to 500;

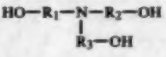
n_1 and n_2 are each a positive integer; and

n_3 is 0 or a positive integer;

said short chain triol (D) being represented by the formula (II):



or by the formula (III):



wherein

R_1 is a group represented by the formula:

$—CH_2)_m(OCH_2CH_2)_n$

(where m and n are each an integer from 0 to 6, provided that, when one of m and n is 0, the other is an integer other than 0);

R_2 is a group represented by the formula:

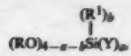
$$-(CH_2)_p(OCH_2CH_2)_q-$$

(where p and q are each an integer from 0 to 6, provided that, when one of p and q is 0, the other is an integer other than 0);

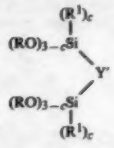
R_3 is a group represented by formula:

$$+CH_2\rightarrow_r CH-$$
$$\quad\quad\quad

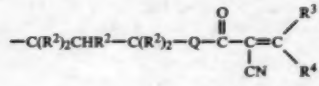
(b) an effective amount of an ultraviolet light absorbing agent comprising a compound having the formula,



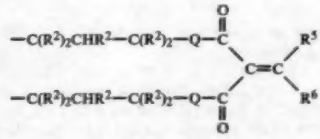
and alkoxysilyl malonates having the formula,



where Y is



and Y' is



R is a $C_{(1-8)}$ alkyl radical, R^1 is selected from R, $C_{(6-13)}$ aryl radicals and halogenated derivatives thereof, R^2 is selected from hydrogen and R radicals, R^3 and R^5 are selected from $C_{(6-13)}$ aryl radicals, R^4 and R^6 are selected from hydrogen, R and R^3 radicals, Q is selected from —O— and

a is an integer equal to 1 to 3 inclusive, b is a whole number equal to 0 to 2 inclusive and the sum of a+b is equal to 1 to 3 inclusive and c is a whole number equal to 0 to 2 inclusive.

4,368,242

MAGNETIC RECORDING MEDIUM

Kaoru Nakajima, Izumi; Masashi Somezawa, Sendai; Minoru Takamizawa, Annaka; Yoshio Inoue, and Hiroshi Yoshioka, both of Annaka, all of Japan, assignors to Sony Corporation and Shin-Etsu Chemical Co., Ltd., both of Tokyo, Japan

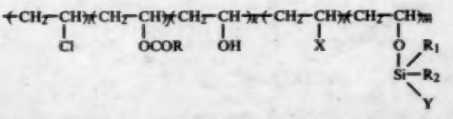
Filed Aug. 24, 1981, Ser. No. 295,390

Claims priority, application Japan, Aug. 23, 1980, 55-116165

Int. Cl.³ H01F *10/02*

U.S. Cl. 428—447 **12 Claims**

1. A magnetic recording medium having a magnetic layer comprising magnetic or magnetizable powders or particles, and a binder comprising at least one compound represented by the following general formula (I):



(wherein R is a methyl or ethyl group, R_1 is an alkyl group having from 1 to 4 carbon atoms, an alkoxy group having from 1 to 4 carbon atoms or a phenyl group, R_2 is an alkyl group having from 1 to 4 carbon atoms or an alkoxy group having from 1 to 4 carbon atoms, X is a group containing a double bond, Y is a group containing a double bond, i is a number in the range of approximately 200 to 800, j is a number in the range of approximately 10 to 200, k is a number in the range up to approximately 200, l is a number in the range of approximately 3 to 100, and m is a number in the range of approximately 1 to 50).

4,368,243

BATTERY SEPARATOR

Dennis D. O'Rell, Boxborough, and Nan J. Lin, Burlington, both of Mass., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 195,918, Oct. 10, 1980, abandoned, which is a continuation of Ser. No. 51,175, Jun. 22, 1979, Pat. No. 4,228,225. This application Mar. 4, 1981, Ser. No. 240,401

Int. Cl.³ H01M *2/18*

U.S. Cl. 429—147 **21 Claims**

1. A sheet product suitable for use as a separator in an acid battery comprising an acid-stable porous sheet material, said sheet material having first and second faces formed within spaced planes containing said faces and into a plurality of separate continuous open channels on each of said faces, each channel on each face defining a separation between two channels on the other face, each of said channels defining an imaginary median line, at least some portions of at least some of said channels extending laterally with respect to said median line such that the overall channel configuration of said sheet has at least about 20 percent extending laterally beyond the minimum lateral extension for each channel, and said channels being so configured that a tangent to substantially any portion of each of said channels is oriented at an acute angle theta of no greater than 70 degrees with respect to an imaginary vertical line oriented from bottom to top of a battery containing at least one separator formed from said sheet product.

4,368,244

ZINC ELECTRODE FOR USE IN RECHARGEABLE ELECTROCHEMICAL CELLS

Ivan F. Danzig, Gainesville, Fla., assignor to General Electric Company, Gainesville, Fla.

Continuation of Ser. No. 158,484, Jun. 11, 1980, abandoned. This application Mar. 19, 1981, Ser. No. 245,599

The portion of the term of this patent subsequent to Jul. 28, 1998, has been disclaimed.

Int. Cl.³ H01M *10/30*

U.S. Cl. 429—217 **16 Claims**

1. A zinc electrode for use in rechargeable nickel-zinc electrochemical cells having greatly enhanced cycle life which comprises in admixture Zn, ZnO, HgO and an organic liquid binder produced via the reaction of diacetone acrylamide (DAA) and acrylic acid, which mixture has been formed into a paste and uniformly applied to a suitable current collector, wherein the ZnO component has an average surface area of about 9–10 m^2/gr.

4,368,245

METHOD FOR MAKING MATT DIFFUSION PATTERNS

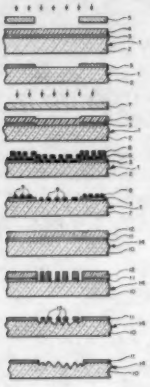
Erich Bayer, Trostberg, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Nov. 10, 1980, Ser. No. 205,564

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1979, 2946235

Int. Cl.³ G03C *5/06*

U.S. Cl. 430—5 **11 Claims**



1. A process for the photolithographic production of a matt diffusion pattern, the process comprising the following steps:

(a) providing a mask substrate having an opaque pattern formed thereon;

(b) applying a mask photoresist layer to a face of the mask substrate over the opaque pattern;

(c) exposing the mask photoresist layer through a matt diffusion plate;

(d) developing the mask photoresist layer to remove portions thereof;

(e) applying an opaque layer to the mask substrate face over the remaining portions of the mark photoresist layer;

(f) removing the remaining portions of the mask photoresist layer together with the overlying portions of the opaque layer to form an exposure mask;

(g) applying an opaque layer to a face of a transparent carrier plate;

(h) applying a carrier plate photoresist layer to the carrier plate opaque layer;

(i) exposing the carrier plate photoresist layer through the exposure mask;

(j) developing the carrier plate photoresist layer to remove portions thereof;

(k) etching the carrier plate opaque layer to remove exposed portions thereof;

(l) removing the remaining portions of the carrier plate photoresist layer; and then

(m) deeply etching the exposed portions of the carrier plate face to underetch and remove at least a portion of the remaining carrier plate opaque layer and thereby to form an optically diffusing patterned region.

9. A process for producing an exposure mask for the photolithographic production of a patterned optical diffuser having an optically diffusing region and an optically non-diffusing region, said process comprising the following steps:

(a) providing an exposure mask substrate having an opaque pattern formed thereon;

(b) applying a photoresist layer to a face of the mask substrate aligned with the opaque pattern;

(c) exposing the photoresist layer through a diffusion matt plate to form a pattern of exposed and unexposed regions on the photoresist layer;

(d) developing the photoresist layer to remove portions thereof and thereby to uncover underlying portions of the mask;

(e) applying an opaque layer over the remaining portions of the photoresist layer and the uncovered underlying portions of the face of the mask substrate; and then

(f) removing the remaining portions of the photoresist layer and the portions of the opaque layer overlying the remaining portions of the photoresist layer, thereby producing a pattern of remaining portions of the opaque layer suitable for photolithographic production of an optical diffusing region.

4,368,246

PHOTOGRAPHIC MATERIALS AND PROCESSES COMPRISING COLOR-FORMING SULFONAMIDODIPHENYLAMINE DYE PRECURSORS AND CORRESFONDING PHENAZINE DYES

Rolf S. Gabrielsen, Webster; Patricia A. Graham, Williamson, and James E. Kiljanowicz, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 6, 1981, Ser. No. 280,673

Int. Cl.³ 430 *955;* G03C *7/00, 1/40*

U.S. Cl. 430—9 **44 Claims**

1. In a photographic element comprising a support having thereon a photographic silver salt and a dye precursor, the improvement comprising:

as said dye precursor, a color-forming para-sulfonamidodiphenylamine having one to two sulfonamido groups in positions ortho to the —NH— moiety separating the two phenyl groups of the para-sulfonamidodiphenylamine and wherein the para-sulfonamidodiphenylamine, in oxidized form, intramolecularly reacts to produce a sulfonamido substituted phenazine dye.

4,368,247

PHOTOGRAPHIC MATERIALS AND PROCESSES COMPRISING OXOINDOLIZINE AND OXOINDOLIZINIUM COMPOUNDS

George L. Fletcher, Jr., Pittsford, N.Y.; Steven L. Bender, Georgetown, Ill., and Donald H. Wadsworth, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 29, 1981, Ser. No. 278,013

Int. Cl.³ G03C *1/52*

U.S. Cl. 430—17 **30 Claims**

1. In a photographic element comprising a support having thereon a photosensitive cyclopropenone in binder, the improvement comprising:

in reactive association with said cyclopropenone, a pyridine compound that reacts with said cyclopropenone to form an oxoindolizine or oxoindolizinium dye.

4,368,248

PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING NOVEL NONDIFFUSIBLE 2-(2-PYRIDYLAZO)-4,5-BIS(TERTIARY AMINO)PHENOL BLACK DYE-RELEASING COMPOUNDS AND PRECURSORS THEREOF

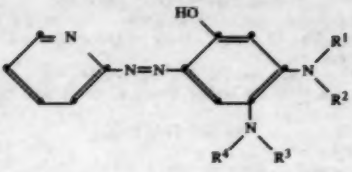
Norman W. Kalenda, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 282,612, Jul. 13, 1981. This application Mar. 5, 1982, Ser. No. 354,986

Int. Cl.³ C09B *45/00;* G03C *1/40*

U.S. Cl. 430—17 **12 Claims**

1. A photographic element comprising a support having thereon a coordination complex of a polyvalent metal ion and a compound having the formula:



wherein:

(a) R^1 and R^2 each independently represents an alkyl group of 1 to about 6 carbon atoms or can be taken together with the nitrogen to which they are attached to complete a 5- or 6-membered heterocyclic ring; and

(b) R^3 and R^4 each independently represents an alkyl group of 1 to about 6 carbon atoms or can be taken together with the nitrogen to which they are attached to complete a 5- or 6-membered heterocyclic ring.

4,368,249

PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING NOVEL NONDIFFUSIBLE PYRIDYLAZO(DIALKYLAMINO)PHENOL MAGENTA DYE-RELEASING COMPOUNDS AND PRECURSORS THEREOF

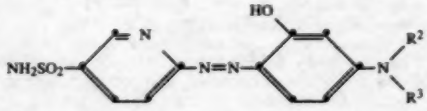
Richard B. Anderson, and Norman W. Kalenda, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 282,611, Jul. 13, 1981. This application Mar. 5, 1982, Ser. No. 355,001

Int. Cl.³ G03C *1/40*; C09B *45/00*

U.S. Cl. 430—17 **10 Claims**

1. A photographic element comprising a support having thereon a coordination complex of a polyvalent metal ion and a compound having the formula:



wherein:

R^2 and R^3 each independently represents hydrogen, an alkyl group of 1 to about 6 carbon atoms, or they can be taken together with the nitrogen to which they are attached to form a 5- or 6-membered heterocyclic ring, or one of said R^2 and R^3 can be an aryl group having from 6 to about 10 carbon atoms.

4,368,250

DRY TRANSFER OF ELECTROPHOTOGRAPHIC IMAGES OF AN INTUMESCENT ELECTROSCOPIC THERMOADHESIVE TOWER

Sidney Cooper, Roslyn Harbor, and Ezekiel J. Jacob, Brooklyn, both of N.Y., assignors to Ani-Live Film Service Inc., New York, N.Y.

Division of Ser. No. 799,476, May 23, 1977, Pat. No. 4,216,283. This application Jan. 14, 1980, Ser. No. 112,826

Int. Cl.³ G03G *13/16*

U.S. Cl. 430—109 **3 Claims**

1. An electrophotographic process comprising forming an electrostatic image on a carrier sheet corresponding to information to be recorded, depositing a pattern of a toner composition on said carrier sheet thereby forming a raised pattern of said toner on said carrier sheet corresponding to said electrostatic image, the toner-image thereby formed comprising upper and lower surfaces, said lower surface being abhesive to said carrier sheet with which it is in contact and wherein said upper surface possesses adhesive characteristics whereby said toner-image may be directly transferred to a receptor surface brought into contact with said upper surface, said toner comprising an intumescent electroscopic powder mixture, comprising a thermoadhesive agent comprising microspheres carrying or containing adhesive.

4,368,251

COLOR DIFFUSION TRANSFER PHOTOGRAPHIC LIGHT-SENSITIVE SHEET

Shigetoshi Ono, and Shinsaku Fujita, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

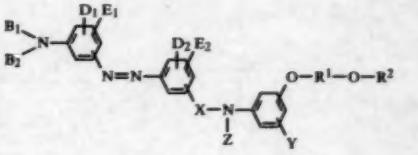
Filed Apr. 16, 1980, Ser. No. 140,933

Claims priority, application Japan, Apr. 17, 1979, 54-46948

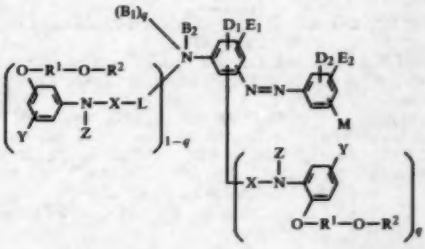
Int. Cl.³ G03C *1/40, 1/10*

U.S. Cl. 430—223 **35 Claims**

1. A photographic light-sensitive sheet containing at least one light-sensitive silver halide emulsion layer, with at least one of said emulsion layers being associated with a compound represented by the following general formula (I) or (II):



(I)



(II)

wherein B_1 represents a hydrogen atom, an alkyl group, a substituted alkyl group, an aryl group, a substituted aryl group, an aralkyl group, or a substituted aralkyl group, B_2 represents a hydrogen atom, an alkyl group, a substituted alkyl group, an aryl group, a substituted aryl group, an aralkyl group, a substituted aralkyl group, an acyl group represented by $—COR^3$ (wherein R^3 represents an alkyl group, a substituted alkyl group, an aralkyl group, a substituted aralkyl group, an aryl group, or a substituted aryl group), an alkylsulfonyl group, a substituted alkylsulfonyl group, an arylsulfonyl group, or a substituted arylsulfonyl group; D_1 and D_2 may be the same or different and each represents a hydrogen atom, an alkyl group, a substituted alkyl group, an alkoxy group, a substituted alkoxy group, or a halogen atom provided that D_2 does not represent an alkoxy-substituted alkoxy group; E_1 and E_2 may be the same or different and each represents a hydrogen atom, a trifluoromethyl group, a cyano group, a carboxylic acid ester group represented by $—COOR^3$, a nitro group, a halogen atom, an alkyl group, a substituted alkyl group, an alkoxy group, a substituted alkoxy group, an alkylsulfonyl group, a substituted alkylsulfonyl group, an arylsulfonyl group, a substituted arylsulfonyl group, an alkylcarbonyl group, a substituted alkylcarbonyl group, a sulfonamido group represented by $—NHSO_2R^3$, a carbonamido group represented by $—NHCOR^3$, a sulfamoyl group represented by $—SO_2NR^4R^5$ (wherein R^4 represents a hydrogen atom, an alkyl group or a substituted alkyl group, R^5 represents a hydrogen atom, an alkyl group, a substituted alkyl group, an aralkyl group, a substituted aralkyl group, an aryl group, or a substituted aryl group, or R^4 and R^5

may combine directly or through an oxygen atom to form a ring), or a carbamoyl group represented by $—CONR^4R^5$, provided that E_2 does not represent an alkoxy-substituted alkoxy group; R^1 represents an alkylene group containing two or more carbon atoms; R^2 represents an alkyl group or a substituted alkyl group; Z represents a hydrogen atom, an alkyl group or a substituted alkyl group; X represents a divalent linking group of the formula $—T\text{-}A)_n(J)_p$ wherein J represents a divalent group selected from a sulfonyl group and a carbonyl group, A represents an alkylene group, an aralkylene group or an arylene group, T represents a divalent oxy group, carbonyl group, carboxyamido group, carbamoyl group, sulfonamido group, sulfamoyl group, sulfinyl group, or sulfonyl group; and n and p each represents 0 or 1; L represents an alkylene group or an arylene group; M represents a hydrogen atom, an alkyl group, a substituted alkyl group, an alkoxy group, a substituted alkoxy group, a halogen atom, a sulfamoyl group of the formula $—SO_2NR^4R^5$, or a carbamoyl group of the formula $—CONR^4R^5$; q represents 1 or 0; and Y represents a diffusibility-controlling moiety.

4,368,252

PRINTED CIRCUIT SUBSTRATE WITH RESISTANCE ELEMENTS

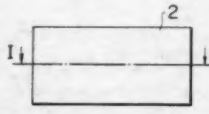
Takeshi Kakuhashi, and Yasufumi Miyake, both of Ibaraki, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 49,023, Jun. 15, 1979, abandoned, which is a division of Ser. No. 884,298, Mar. 7, 1978, Pat. No. 4,204,187. This application Nov. 25, 1981, Ser. No. 325,085

Claims priority, application Japan, Nov. 14, 1977, 52-137155

Int. Cl.³ B05D 5/12; G03C 5/00; C23F 1/02

U.S. Cl. 430—312 **3 Claims**



1. A method for forming a printed circuit substrate with resistive elements, which comprises the steps of:

(a) providing a sheet of highly conductive material;

(b) covering both sides of said sheet with layers of photoresistive material;

(c) placing the sheet with photoresistive material layers between a photographic negative for forming a conductor pattern and a photographic negative for forming a resistor pattern;

(d) exposing and developing the photoresistive material so as to expose the surface of the sheet corresponding to the conductor pattern on one side of a said sheet and the surface of the sheet corresponding to the resistor pattern on the other side of said sheet;

(e) plating the two pattern regions with a metallic material stable with an etching solution for corrosion of said sheet to form conductor pattern films at the exposed portions of said sheet on said one side and resistor pattern films at the exposed portions of said sheet of said other side;

(f) removing the remaining photoresistive material layers; and

(g) attaching an insulating support to said second side of said sheet.

4,368,253

IMAGE FORMATION PROCESS

George E. Green, Stapleford, and John S. Waterhouse, Cherry Hinton, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 19, 1982, Ser. No. 340,670

Claims priority, application United Kingdom, Jan. 28, 1981, 8102847

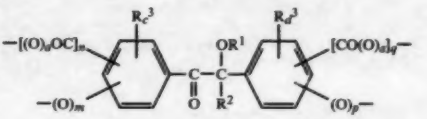
Int. Cl.³ G03C 5/00

U.S. Cl. 430—326 **16 Claims**

1. A process for the formation of an image which comprises:

(1) exposing imagewise to actinic radiation a photoresist composition comprising:

(a) a film-forming organic material having at least one substituted benzoin group of formula:



I

where:

R^1 denotes a hydrogen atom, an alkyl, cycloalkyl, cycloalkylalkyl, or aralkyl group or a group $—(CH_2)_bX$,

R^2 denotes a hydrogen atom or an alkyl, cycloalkyl, cycloalkylalkyl, aryl or aralkyl group,

R^3 denotes a halogen atom or an alkyl, alkoxy, cycloalkyl, cycloalkylalkyl or phenyl group,

X denotes a halogen atom, an alkoxy group, a phenoxy group, a group $—COOR^4$ or a group $—OOCR^4$,

R^4 denotes an alkyl group,

a denotes zero or 1,

b denotes an integer of from 1 to 4,

m denotes zero or 1,

n denotes zero or 1, the sum of (m+n) being 1,

p denotes zero or 1,

q denotes zero or 1, the sum of (p+q) being 1,

c denotes zero or an integer of from 1 to 3, and

d denotes zero or an integer of from 1 to 3; and

(b) a compound which is polymerisable under the influence of a free radical catalyst to form a higher molecular weight material which is more soluble in a developer than the composition prior to exposure, so that the solubility of the composition in a developer is increased in the exposed portion; and

(2) treating the composition with a developer to remove the exposed portion.

4,368,254

NON-SILVER LIGHT-SENSITIVE COMPOSITION

Anatoly V. Vannikov, Teply stan, 2 mikroraion, korpus 20, kv. 29; Vadim G. Glotov, ulitsa Melnikova, 27, kv. 53; Antonina D. Grishina, ulitsa Vavilova, 44, korpus 3, kv. 77; Valentina N. Ivanova, ulitsa Geroev Panfilovtsev, 3, korpus 1, kv. 210; Vladimir S. Fedorov, ulitsa 26 Bakinskikh komissarov, 3, korpus 1, kv. 58; Gennady M. Chernov, Bolshaya Cheremushkinskaya ulitsa, 2, korpus 2, kv. 33, and Vladimir E. Kazarinov, Leninsky prospekt, 11, kv. 126, all of Moscow, U.S.S.R.

Continuation of Ser. No. 68,471, Aug. 20, 1979, abandoned. This application Jan. 29, 1981, Ser. No. 230,066

Int. Cl.³ G03C 1/52

U.S. Cl. 430—333 **8 Claims**

1. A non-silver light-sensitive composition consisting of the following components, in percent by weight:

a hydroxyderivative of naphthalene selected from the group consisting of α-naphthol, β-naphthol, 1-naphtholphthalein; aminonaphthol and dihydroxynaphthalene as anti fogging agent	1 to 10
an aromatic amine selected from the group	

-continued

consisting of diphenylbenzlamine, indole and dibenzylaniline as color former	29 to 60
a saturated halogenated hydrocarbon as photoactivator	35 to 29
a polymeric binder	35 to 1.

4. Method of producing images, which comprises exposing to light on a substrate a non-silver light-sensitive composition consisting of, in percent by weight:

a hydroxyderivative of naphthalene selected from the group consisting of α-naphthol, β-naphthol, 1-naphtholphthalein; aminonaphthol and dihydroxynaphthalene as anti fogging agent	1 to 10
an aromatic amine selected from the group consisting of diphenylbenzlamine, indole and dibenzylaniline as color former	29 to 60
a saturated halogenated hydrocarbon as photoactivator	35 to 29
a polymeric binder	35 to 1.

until a latent image is formed, intensifying the thus formed image by exposing the same to visible light with an intensity of 0.1 to 1.0 W/cm^2 for 1–5 minutes, and fixing the resulting image by heat treatment.

4,368,255
METHOD OF PROCESSING MONOCHROME SILVER HALIDE MATERIAL

Thomas G. Borg, Brentwood, England, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Jul. 15, 1981, Ser. No. 283,420

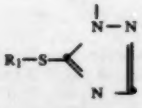
Claims priority, application United Kingdom, Jul. 16, 1980, 8023175

Int. Cl.³ G03C 7/00

U.S. Cl. 430—351 **9 Claims**

1. A method of processing monochrome silver halide material which contains in at least one silver halide layer in addition to the normal image-forming colour coupler or couplers, a development inhibitor releasing compound which method comprises developing the exposed material in a color developing solution which comprises not more than 2.5 g/liter of a paraphenylene diamine colour developing agent of the formula

where R_{16} is alkyl having from 1 to 6 carbon atoms or substituted alkyl, R_{17} is substituted alkyl, R_{18} is hydrogen or alkyl having from 1 to 4 carbon atoms or substituted alkyl, and X is an anion, which colour colour developing agent is able to couple with the colour coupler or couplers and D.I.R. compound present, the D.I. group being an alkyl thiotriazole group of the formula



where R_1 is an alkyl group having from 4 to 8 carbon atoms, the process further comprising silver halide fixing, silver image bleaching and washing steps.

4,368,256
PROCESS FOR PRODUCTION OF MASKED POSITIVE COLOR IMAGES BY THE SILVER DYE BLEACH PROCESS AND THE SILVER DYE BLEACH MATERIAL USED IN THIS PROCESS

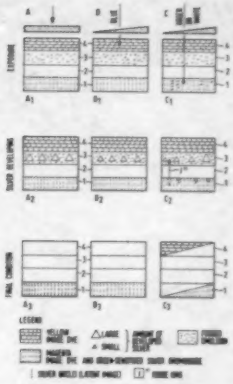
Herbert Mollet, Tentlingen, and Dieter Wyrsch, Marly, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Jul. 13, 1981, Ser. No. 282,687

Claims priority, application Switzerland, Jul. 22, 1980, 5588/80

Int. Cl.³ G03C 7/04

U.S. Cl. 430—359 **21 Claims**



1. A process for the production of masked positive colour images by the silver dye bleach process, by exposure of a photographic material for the silver dye bleach process, silver developing, dye bleaching, silver bleaching and fixing, the silver bleaching being optionally carried out simultaneously with the dye bleaching and/or the fixing, in a single processing bath, in which process the photographic material contains

(a) in at least one layer, at least one first dye from which at least one undesired secondary colour density is to be compensated,

(b) in the layer(s) (a) and/or in a layer adjacent to this layer, (in each case) one iodide-containing silver halide emulsion associated with this dye (these dyes),

(c) in at least one other layer, at least (in each case) one second dye, the main colour density of which corresponds to the secondary colour density (densities), to be compensated, of the first dye(s),

(d) in the layer(s) (c) and/or in a layer adjacent thereto, an iodide-free silver halide emulsion associated with this dye (these dyes), or, in comparison with the emulsions mentioned under (b) a silver halide emulsion of low iodide content, and

(e) in the layer(s) (c) and/or in at least one other layer which is adjacent to the layer(s) (c) and which is separated from one or more layers (a) by at least one intermediate layer, a core-shell emulsion which is free of iodide or has a low iodide content, the particles of which emulsion consist of a surface-fogged silver halide core and of an unfogged silver halide shell enclosing the latter, it being possible for this emulsion to be developed spontaneously up to the maximum density by the action of a developer, and optionally a developing retarder, and the developing is carried out in a developer solution which is free of silver-complexing agents.

4,368,257

METHOD FOR FORMING A CYAN DYE IMAGE

Yasushi Usagawa, Hino; Wataru Fujimatsu, Hachioji; Osamu Sasaki, Hino, and Katsumi Matsuura, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Jan. 14, 1981, Ser. No. 225,137

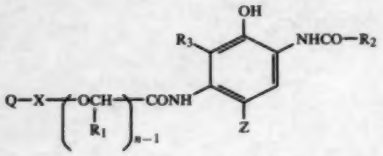
Claims priority, application Japan, Jan. 14, 1980, 55-2755

The portion of the term of this patent subsequent to Nov. 10, 1998, has been disclaimed.

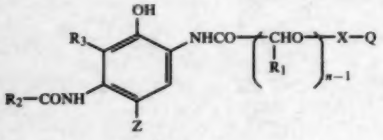
Int. Cl.³ G03C *7/00*

U.S. Cl. 430—384 **8 Claims**

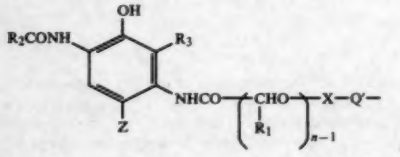
1. A method for forming a cyan dye image comprising developing an imagewisely exposed silver halide emulsion layer coated on a support with an aromatic primary amine developing agent in the presence of a cyan coupler represented by the formula [I], [II] or [III]:



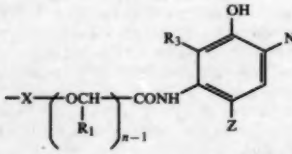
[I]



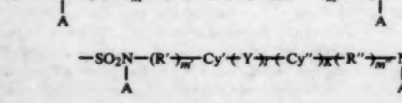
[II]



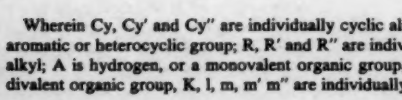
[III]



(Wherein, R_1 is hydrogen atom, or alkyl having 1 to 20 numbers of carbon; R_2 is alkyl, aryl, or hetero ring; R_3 is hydrogen, or halogen; X is arylene or alkylene; Z is coupling off group; and n is 1 or 2.);



Q' is



Wherein Cy, Cy′ and Cy″ are individually cyclic aliphatic, aromatic or heterocyclic group; R, R′ and R″ are individually alkyl; A is hydrogen, or a monovalent organic group, Y is a divalent organic group, K, l, m, m′ m″ are individually 0 or 1 with proviso that when m—0, Cy is cyclic aliphatic or heterocyclic group.

4,368,258

PROCESS FOR PREPARING IMPREGNATED POLYMER LATEX COMPOSITIONS

Mitsuto Fujiwhara; Syunji Matsuo; Tsuneo Wada; Naoto Abe; Toyoaki Masukawa; Akio Iijima, and Keiji Oishi, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 74,070, Sep. 10, 1979, abandoned, which is a continuation-in-part of Ser. No. 932,495, Aug. 10, 1978, abandoned. This application Mar. 11, 1981, Ser. No. 242,580

Claims priority, application Japan, Aug. 17, 1977, 52-98566

Int. Cl.³ G03C *1/40, 1/48, 1/10, 1/72*

U.S. Cl. 430—493 **17 Claims**

1. In the process for preparing impregnated polymer latex compositions by impregnating a hydrophobic substance into dispersed polymer particles in an aqueous polymer latex, the improvement comprising impregnating said hydrophobic substance, wherein the impregnation is effected by mixing said hydrophobic substance which is in the solid state, with a water-miscible organic solvent and the aqueous polymer latex comprising a dispersion of said polymer particles in water, said polymer of the polymer latex is prepared from ethene monomers and contains at least one hydrophilic group,

said mixing which effects said impregnation being carried out by one of the following four mixing operations:

(i) forming a suspension of particles of said hydrophobic substance in said aqueous polymer latex and then adding small portions of said water-miscible organic solvent to said suspension;

(ii) adding and mixing particles of said hydrophobic substance, and said water-miscible organic solvent, from different hoppers to said aqueous polymer latex at the same time;

(iii) adding and mixing said aqueous polymer latex, particles of said hydrophobic substance, and said water-miscible organic solvent or in one receptacle at the same time; or

(iv) adding and mixing particles of said hydrophobic substance to a mixture of said aqueous polymer latex and a water-miscible organic solvent;

whereby said solid state hydrophobic substance is gradually dissolved by said water-miscible solvent while said dissolved hydrophobic substance is being impregnated into said dispersed polymer particles, and finally said polymer particles are finely dispersed in a medium comprising water and said water-miscible solvent.

11. The process as claimed in claim 1, wherein the hydrophobic substance is a hydrophobic photographic additive.

4,368,259

COLOR PHOTOGRAPHIC RECORDING MATERIAL CONTAINING AN EMULSIFIED, HYDROPHILIC COLOR-FORMING COMPOUND

Fritz Nittel, Leverkusen; Hans Langen, Bonn, and Erwin Ranz, Leverkusen, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 15, 1981, Ser. No. 225,383

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1980, 3002201

Int. Cl.³ G03C *1/40*

U.S. Cl. 430—546 **6 Claims**

1. A color photographic recording material comprising at least one photosensitive silver halide emulsion layer and, associated therewith, a non-diffusing hydrophilic color-forming compound, wherein the improvement comprises the photosensitive silver halide emulsion layer or a non-photosensitive binder layer adjacent thereto contains a stable dispersion of a solution of a hydrophilic dye producing compound and an

aliphatic tertiary hydroxy amine, in which at least two of the aliphatic groups present contain a hydroxyl group, in a hydrophobic oil former.

4,368,260

PHOTOGRAPHIC LIGHT SENSITIVE ELEMENT

Tawara Komamura; Jiro Takahashi, and Ryuichiro Kobayashi, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

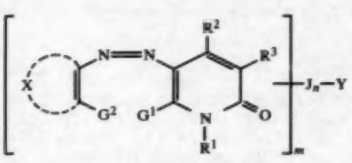
Filed Dec. 23, 1981, Ser. No. 333,900

Claims priority, application Japan, Dec. 27, 1980, 55-188970

Int. Cl.³ G03C 1/40, 1/10

U.S. Cl. 430—562 4 Claims

1. A photographic light-sensitive element which comprises on a support a light-sensitive silver halide emulsion layer and having associated therewith a non-diffusible compound capable of, under alkaline condition, releasing a diffusible azo dye, said compound having the formula (1),



(1)

wherein X represents a group of atoms necessary to complete a naphthalene ring or a benzene ring, G^1 represents a hydroxy group, a salt thereof or a hydrolyzable precursor thereof, G^2 represents a carboxy group, a salt thereof or a hydrolyzable precursor thereof, a hydroxy group, a salt thereof or a hydrolyzable precursor thereof, R^1 is a hydrogen atom, an alkyl group or an aryl group, R^2 represents a hydrogen atom, a halogen atom, an alkyl group, a carboxy group, a carbamoyl group or an amino group, each of which group may be substituted, R^3 represents a hydrogen atom, a carboxy group, a carbamoyl group, a cyano group or a trifluoromethyl group, J represents a divalent linking group, Y represents a ballasted carrier moiety capable of releasing said diffusible dye under alkaline condition as a function of development of silver halide, m represents an integer of 1 to 3 and n represents zero or an positive integer not larger than m.

4,368,261

METHOD AND REAGENT FOR THE DETERMINATION OF TRIGLYCERIDES

Sigmar Klose, Berg; Albert Röder, Seeshaupt, and Walter Schneider, Weilheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Dec. 5, 1980, Ser. No. 213,702

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1979, 2950381

Int. Cl.³ C12Q 1/48, 1/44; G01N 31/00; C12Q 1/32

U.S. Cl. 435—15 28 Claims

1. In a method for the determination of triglycerides which comprises combining sample, lipase, glycerol kinase, adenosine triphosphate, and at least one lipase activator selected from the group consisting of polyethylene oxide ester surfactants, polyethylene oxide ether surfactants, bile acid surfactants, alkyl sulphate surfactants, phenol derivatives, and analine derivatives, under conditions suitable to form glycerol-1-phosphate and adenosine diphosphate and determining the presence or concentration of either glycerol-1-phosphate or adenosine diphosphate, the improvement comprising using a glycerol kinase from *Bacillus stereothermophilis*.

4,368,262

DIAGNOSTIC TEST FOR THE DETECTION OF CANCER

Edsel T. Bucovaz; Walter D. Whybrew, both of Memphis, Tenn., and John C. Morrison, Brandon, Miss., assignors to Research Corporation, New York, N.Y.

Filed Mar. 23, 1981, Ser. No. 246,311

Int. Cl.³ C12Q 1/38, 1/56

U.S. Cl. 435—23 16 Claims

1. A method of detecting cancer in mammals which comprises precipitating by reversible denaturation at least a portion of the proteins in a serum sample from a mammal and then measuring the rate at which said precipitated proteins are re-solubilized.

4,368,263

PRODUCTION OF CEPHALOSPORINS

Christopher Ball, Barrow-in-Furness; John S. Collins, Ulverston, and Paul F. Hamlyn, Nottingham, all of England, assignors to Glaxo Group Limited, London, England

Filed Apr. 25, 1979, Ser. No. 33,187

Claims priority, application United Kingdom, Apr. 26, 1978, 16528/78

Int. Cl.³ C12P 35/00

U.S. Cl. 435—47 12 Claims

1. A method of producing an improved strain of *Acremonium chrysogenum* which comprises submitting parent strains of *Acremonium chrysogenum* to protoplast fusion and nuclear fusion and selecting and propagating said improved strain from the protoplast and nuclear fused progeny or from a mutant thereof.

9. An improved strain of *Acremonium chrysogenum* produced by submitting parent strains of *Acremonium chrysogenum* to protoplast fusion and nuclear fusion and selecting and propagating said improved strain from the protoplast and nuclear fused progeny or from a mutant thereof.

4,368,264

FERMENTATION METHODS OF PREPARING ERGOSTADIENTRIOLS

Fritz W. Zilliken, Remagen, Fed. Rep. of Germany, assignor to Z-L Limited Partnership, Janesville, Wis.

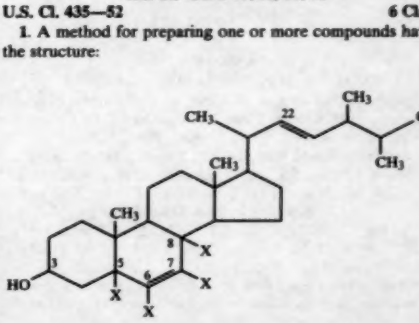
Division of Ser. No. 22,202, Mar. 19, 1979, Pat. No. 4,334,577, which is a continuation-in-part of Ser. No. 804,594, Jun. 8, 1977, Pat. No. 4,157,984. This application Aug. 4, 1980, Ser. No. 175,074

The portion of the term of this patent subsequent to Nov. 4, 1997, has been disclaimed.

Int. Cl.³ C12P 33/00, 33/16

U.S. Cl. 435—52 6 Claims

1. A method for preparing one or more compounds having the structure:



wherein X may be hydrogen or a hydroxyl group provided that X twice be hydroxyl which comprises fermenting soybeans in presence of fungus *R. oligosporus* or *R. oryzae*, contacting the resulting fermented soybean product with methanol to separate from said fermented soybean product an extract con-

taining said compound or compounds and isolating said compound or compounds from said methanol extract.

4,368,265

CULTURING A STRAIN OF NOCARDIA TO PRODUCE ANTIBIOTIC X-14868A

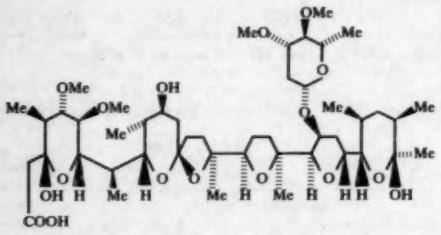
Chao-Min Liu, Cedar Grove; Barbara Prosser, Bloomfield, and John Westley, Cedar Grove, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 116,696, Jan. 30, 1980, Pat. No. 4,278,663. This application Feb. 23, 1981, Ser. No. 237,544

Int. Cl.³ C12P 19/60, 17/18

U.S. Cl. 435—75 1 Claim

1. A process to produce a compound of the formula



which comprises cultivating a strain of Nocardia X-14868 in an aqueous carbohydrate solution containing a nitrogenous nutrient under submerged aerobic conditions and thereafter isolating antibiotic X-14868A from said solution.

4,368,266

METHOD FOR PRODUCING L-GLUTAMIC ACID BY FERMENTATION

Osamu Tosaka, Tokyo; Yutaka Murakami, Yokosuka; Shigeho Ikeda, and Hiroe Yoshii, both of Yokohama, all of Japan, assignors to Ajinomoto Company Incorporated, Tokyo, Japan

Filed Dec. 19, 1980, Ser. No. 218,071

Claims priority, application Japan, Dec. 27, 1979, 54-170927; Jul. 10, 1980, 55-94395

Int. Cl.³ C12P 13/14; C12N 1/20; C12R 1/13, 1/15

U.S. Cl. 435—110 11 Claims

1. A method for producing L-glutamic acid by fermentation which comprises aerobically culturing an L-glutamic acid producing mutant of the genus Brevibacterium or Corynebacterium which is deficient in isocitrate lyase and requires acetic acid for growth, and recovering L-glutamic acid accumulated in the resulting culture liquid.

4,368,267

EPOXIDATION OF LOWER α-OLEFINS

Ching-Tsang Hou; Ramesh N. Patel, both of Edison, N.J., and Allen I. Laskin, New York, N.Y., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 896,467, Apr. 14, 1978, abandoned, and Ser. No. 21,227, Mar. 16, 1979, abandoned, and Ser. No. 24,262, Mar. 27, 1979, abandoned. This application Feb. 6, 1980, Ser. No. 119,096

Int. Cl.³ C12P 17/02; C12N 11/02, 1/28, 1/30

U.S. Cl. 435—123 42 Claims

1. A process of epoxidation of a C_2–C_4 alpha-olefin, a C_4–C_5 branched olefin, a C_4–C_5 diene or a vinyl aromatic compound in a reaction medium which comprises: epoxidizing said olefin, diene or vinyl aromatic compound by contacting said olefin, diene or vinyl aromatic compound under aerobic conditions in the presence of cells of a bacterial methylotrophic microorganism, a genetically engineered derivative of said cells, or an oxygenase enzyme preparation prepared from said cells or a genetically engineered derivative thereof, wherein said cells, derivative or enzyme preparation exhibit epoxidase enzyme activity, until at least an isolatable amount of the corresponding epoxide is obtained, wherein said microorganism has been aerobically grown in a nutrient medium containing methane.

4,368,268

DIRECT FERMENTATION OF D-XYLOSE TO ETHANOL BY A XYLOSE-FERMENTING YEAST MUTANT

Cheng-Shung Gong, West Lafayette, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.

Filed May 15, 1981, Ser. No. 263,925

Int. Cl.³ C12D 7/06

U.S. Cl. 435—161 18 Claims

1. A process for the direct fermentation of D-xylose to ethanol which comprises inoculating a medium comprising growth nutrients and D-xylose with a yeast mutant of the strain Candida sp. having an ability to ferment D-xylose to ethanol with a bioconversion yield of at least 80%, permitting the inoculated medium to ferment for a period of time sufficient to achieve a conversion of D-xylose to ethanol of at least 80% and recovering the ethanol so produced as product.

4,368,269

PROCESS FOR PRODUCING FOOD PROTEINS OF FUNGAL ORIGIN OF FROM MULTICELLULAR ORGANISMS FERMENTATION APPARATUS AND PROTEINS SO-PRODUCED

Thadee J. Staron, Noisy le Roi, France, assignor to Institute National de la Recherche Agronomique, Paris, France

Division of Ser. No. 912,017, Jun. 2, 1978, Pat. No. 4,238,567. This application Jun. 2, 1978, Ser. No. 166,393

Claims priority, application France, Jun. 7, 1977, 77 17449

Int. Cl.³ C12N 15/00, 1/14

U.S. Cl. 435—172 4 Claims

1. Process for obtaining a new strain *Trichoderma album*, comprising:

(1) inoculating selective media with a naturally-occurring strain *Trichoderma viride*,

(2) incubating each culture under the following conditions:

(a) at 27° C. for one day,

(b) at 73° C. for two days in darkness and then for two days in the light,

(c) at 27° C. for two days;

(3) then exposing to ultraviolet rays (250 nm) the white and vigorous strains derived from each culture effected on the selected media, for two hours at 4° C.;

(4) reinjecting the strains into "STARON" medium, a medium which comprises: glucose 20 g, peptone 1 g, extract of yeast 1 g, corn steep 4 g, NaCl 0.5 g, $MgSO_4.7H_2O$ 10 mg, KH_2PO_4 1g, $FeSO_4$ $7H_2O$ 10 mg, and distilled water to 1 liter;

(5) incubating the resulting cultures for two days at 37° C. and then for two days at 27° C., after having removed, before the reduction in temperature from 37° C. to 27° C., the growing strains;

(6) cultivating said strains in said liquid and stirred "STARON" medium for two days at 27° C.;

(7) making sterile samplings;

(8) mixing in the presence of acridine orange the strains rich in proteins, low in glycosamine and antibiotics;

(9) incubating the resulting strains in "STARON" medium, as described in step (4), for two days at 27° C.;

(10) separating the hyphae; and

(11) incubating the resulting strains for two days at 27° C.; subjecting the strains thus obtained again to the above-defined cycle, steps (1) to (11), to a sufficient number of cycles to obtain a strain possessing the desired characteristics and then recovering said new strain *Trichoderma album*.

4,368,270

PROCESS FOR THE RECOVERY OF ENZYME COAGULANTS

Meyer M. Weber, Milwaukee, and John Shovers, Shorewood, both of Wis., assignors to Midwest Biochemical Corp., Milwaukee, Wis.

Continuation of Ser. No. 124,099, Feb. 25, 1980, abandoned. This application Nov. 16, 1981, Ser. No. 322,010

Int. Cl.³ C12N 9/64

U.S. Cl. 435—226 12 Claims

1. A process for the recovery of milk coagulating enzymes from animal organs, comprising the steps of (a) mixing a polar solvent having a surface tension in the range of 18 to 72 dyne cm^{-1} with finely divided animal organs, said organs constituting bovine abomasun, and (b) extracting the organ/polar solvent mixture in a salt solution at a pH in the range of 5.8 to 6.0 to provide an extract containing milk-coagulating enzymes, said salt being present in a concentration from about 2% to about 5% by weight and being water soluble and edible and capable of maintaining said pH in said range when used in said concentration.

4,368,271

PRODUCTION OF MICROBIAL CELLS FROM METHANOL

Yoshiharu Miura, 8-28, Katagiri-cho, Ibaraki-shi, Osaka 567, Japan; Mitsuo Okazaki, Kawanishi, Japan; Setsuo Komemushi, Osaka, Japan; Tenji Sakata, Suita, Japan; Satoshi Shiroza, and Satoshi Obana, both of Ibaraki, Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha and Yoshiharu Miura, both of Osaka, Japan

PCT No. PCT/JP78/00047, § 371 Date Aug. 9, 1980, § 102(e) Date Jul. 30, 1980, PCT Pub. No. WO80/01168, PCT Pub. Date Jun. 12, 1980

PCT Filed Dec. 9, 1978, Ser. No. 212,682

Int. Cl.³ C12N 1/32, 1/20; C12R 1/20

U.S. Cl. 435—247 2 Claims

1. A process for producing microbial cells which comprises cultivating the bacterium *Flavobacterium tosaensis* DS-1 (FERM-P No. 4058) in a culture medium containing methanol as a major carbon source, and recovering the microbial cells from the culture broth.

2. A process for producing microbial cells which comprises cultivating the bacterium *Flavobacterium methanolicola* DS-16 (FERM-P No. 4098) in a culture medium containing methanol as a major carbon source, and recovering the microbial cells from the culture broth.

4,368,272

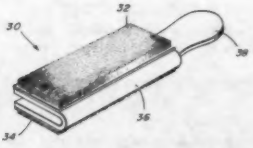
DEVICE FOR IDENTIFYING AND LOCATING DENTAL MICROORGANISMS

Shelby Kashket, Chestnut Hill, Mass., assignor to Forsyth Dental Infirmary for Children, Boston, Mass.

Filed Mar. 12, 1980, Ser. No. 129,682

Int. Cl.³ C12M 1/32; C12Q 1/24; C12M 1/26; A46B 1/00

U.S. Cl. 435—293 2 Claims



1. A dental flora-replica device particularly for use in occlusal teeth surfaces, which device is used for identifying and locating the sites of cariogenic or other microorganisms on the occlusal surfaces of teeth, which device comprises:

(a) a flexible, thin strip of sheet material having a front and a back surface;

(b) the front surface comprising first and second, separate, spaced-apart, elongated, generally parallel strips of sterile, velvet-like surfaces composed of a material to retain microorganisms, when the occlusal surfaces of opposing teeth are pressed against each of the velvet-like surfaces;

(c) hinge means so that the first and second surfaces may be placed in an opposing relationship and in contact with occlusal teeth of a patient;

(d) the back surface marked to locate the site of the designated occlusal teeth whose microorganisms are to be identified and located; and

(e) a removable masking-tape means secured over the first and second velvet-like surfaces, to protect the sterile first and second surfaces prior to use, whereby in use the occlusal, dental replica device may be folded, with the first and second velvet-like surfaces extending outwardly from the top and bottom to contact the occlusal teeth, and, thereafter, the device placed in an open, flat position for application to a bacteriological identification means to identify the microorganisms retained on the first and second velvet-like surfaces.

4,368,273

PROCESS FOR THE UTILIZATION IN THE CERAMICS INDUSTRY OF RED MUD FROM ALUMINA PLANTS

Ferenc Puskas, Budapest, Hungary, assignor to Chemokomplex Vegyipari Gep-es Berendezes Export-Import Vallalat, Budapest, Hungary

Continuation of Ser. No. 101,173, Dec. 7, 1979, abandoned, which is a continuation of Ser. No. 969,404, Dec. 14, 1978, abandoned, which is a continuation of Ser. No. 834,580, Sep. 19, 1977, abandoned, which is a continuation of Ser. No. 667,860, Sep. 19, 1976, abandoned. This application Nov. 19, 1980, Ser. No. 208,269

Int. Cl.³ C04B 35/00

U.S. Cl. 501—155 7 Claims

1. In a process for manufacturing of ceramics wherein a starting mixture is formed into a green ceramic product and is subsequently fired to produce the finished ceramic product, the improvement which comprises preparing said starting mixture by mixing ingredients consisting essentially of from 51–90% dry weight basis of red mud and at least one silicate containing waste material from mining or manufacturing operations wherein the silicate content of said waste material is selected from the group consisting of at least one member of the group of inosilicates, nasosilicates, tectosilicates, primary volcanic silicate rock material, surface volcanic silicate rock material, silicate residue material from oil shale processing, and loess, and said step of firing is carried out between 950 and 1,250 degrees centigrade, until the mixture is converted into a water-insoluble spinel or other double oxide ceramic product.

4,368,274

METHOD FOR REMOVING ALUMINUM FROM POLYETHYLENE TERAPHTHALATE (PET) BOTTLE SCRAP

Paul T. Scott, Kinston, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 20, 1981, Ser. No. 323,434

Int. Cl.³ B08B 3/08

U.S. Cl. 521—48 2 Claims

1. In a method for removing aluminum from PET bottle scrap flakes, the improvement which comprises:

(a) mixing the scrap flakes with a solution containing a chemical that reacts with aluminum, the chemical being at a sufficient concentration and in contact with the scrap at a sufficient temperature and for a sufficient time to completely dissolve the aluminum in the scrap into the solution; then

(b) decanting off the solution with the aluminum dissolved in it, so as to leave behind PET flake; and finally
(c) washing the PET flake.

4,368,275

ISOCYANURATE-VINYL ALCOHOL-VINYL ESTER CHROMATOGRAPHIC PACKING

Yuzo Yanagihara; Kohji Noguchi, and Makoto Honda, all of Kawasaki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 10, 1981, Ser. No. 272,230
Claims priority, application Japan, Jun. 25, 1980, 55/85243; Dec. 26, 1980, 55/183703
Int. Cl.³ C08F 8/12
U.S. Cl. 521—52 **24 Claims**

1. A porous packing for high speed liquid chromatography comprising homogeneously porous crosslinked copplymer granules essentially consisting of (I) units of vinyl alcohol, (II) units of at least one vinyl ester of a carboxylic acid and (III) units of at least one crosslinking monomer having an isocyanurate ring, the ratio of the units (I) to the units (II) in the copolymer being within the range satisfying the following equation:

$$\text{about } 0.4 \leqq a/(a+b) \leqq \text{about } 0.8$$

wherein
a and b are molar ratios of the units (I) and (II), respectively, in the total units (I), (II) and (III) of the copolymer.

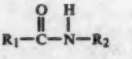
4,368,276

NOVEL OLEFIN POLYMER COMPOSITIONS AND FOAMED ARTICLES PREPARED THEREFROM HAVING IMPROVED ELEVATED TEMPERATURE DIMENSIONAL STABILITY

Chung P. Park, Pickerington, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 267,207, May 26, 1981, abandoned, which is a continuation-in-part of Ser. No. 154,333, May 29, 1980, abandoned. This application May 6, 1982, Ser. No. 375,606
Int. Cl.³ C08V 9/14
U.S. Cl. 521—79 **24 Claims**

1. An expandable olefin polymer composition comprising an olefin polymer, a volatile organic blowing agent and from about 0.15 to about 10 weight percent based upon the weight of said olefin polymer of an N-substituted fatty acid amide of the Formula:



wherein R_1 represents an alkyl group of from about 11 to about 17 carbon atoms and R_2 represents an alkyl group of from about 12 to about 18 carbon atoms, said N-substituted fatty acid amide being selected from the group consisting of N-lauryl lauric acid amide, N-lauryl myristamide, N-myristyl myristamide, N-palmityl myristamide, N-lauryl palmitamide, N-myristyl palmitamide, N-palmityl palmitamide, N-palmityl stearamide and N-stearyl stearamide; said N-substituted fatty acid amide being employed in an amount sufficient to prevent a freshly prepared foam made from such composition from shrinking by more than 10% from its initial foamed volume when subjected to prolonged exposure to atmospheric pressure air at 150° F.

4,368,277

POROUS OPEN-CELL FILLED REACTIVE MATERIAL

Stanislav V. Burinsky, ulitsa Bukharestskaya, 45, kv. 55; Leonard A. Volf, ulitsa Novosibirskaya, 18, kv. 45, and Sasho P. Alexandrov, ulitsa Sadovaya, 54, kv. 511, all of Leningrad, U.S.S.R.

Filed May 2, 1980, Ser. No. 145,971
Claims priority, application U.S.S.R., Mar. 5, 1979, 2762583
Int. Cl.³ C08J 9/00
U.S. Cl. 521—84 **5 Claims**

1. A porous open-cell filled reactive material comprising a polymeric matrix selected from the group consisting of foamed polyvinylformal, foamed polyurethane, and a reactive filler consisting of finely divided reactive oxidation-reduction fibers in an amount of from 10 to 80% by mass of the final material, wherein the oxidation-reduction fibers are selected from the group consisting of polyvinyl alcohol, polyacrylonitrile, cellulose-regenerated and acetate-cellulose fibers with covalently bonded oxidizing-reducing agents selected from the group consisting of polyhydric phenols, anthraquinones, naphthaquinones, oligomeric condensation products thereof with aldehydes, phenothiazine dyestuffs, and compounds having sulphohydryl groups.

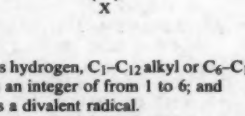
4,368,278

PROCESS FOR THE PRODUCTION OF POLYURETHANES USING CYCLIC N-HYDROXYALKYL-SUBSTITUTED COMPOUNDS CONTAINING AMIDINE GROUPS AS CATALYSTS

Werner Rasshofer, Cologne; Gerhard Grögler, Leverkusen, and Kurt Findeisen, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 3, 1981, Ser. No. 251,011
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1980, 3015440
Int. Cl.³ C08G 18/14
U.S. Cl. 521—115 **10 Claims**

1. A process for the production of a polyurethane comprising reacting a polyisocyanate and a compound having at least two isocyanate-reactive hydrogen atoms and a molecular weight of from 400 to 10,000 in the presence of a catalyst wherein the catalyst is a compound corresponding to the general formula:



wherein
R′ represents hydrogen, C_1–C_{12} alkyl or C_6–C_{10} aryl groups;
n represents an integer of from 1 to 6; and
X represents a divalent radical.

4,368,279

METHOD FOR MECHANICALLY FOAMING SILICONE COMPOSITIONS

Frank J. Modic, and Bruce E. Boudreau, both of Schenectady, N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Apr. 6, 1981, Ser. No. 251,598
Int. Cl.³ C08J 9/30
U.S. Cl. 521—122 **7 Claims**

1. In a method for producing a silicone foam composition wherein said silicone is a curable silicone elastomer comprised of a crosslinkable polydiorganosiloxane base polymer having a viscosity of from 100 to 200,000 centipoise at 25° C., a crosslinking agent and an amount of curing catalyst effective for promoting a cross-linking cure reaction between said polydiorganosiloxane base polymers and said crosslinking agent

thereby providing an elastomeric silicone composition, the improvement which consists essentially of:

mechanically beating an inert gas into a mixture of said curable silicone elastomer to foam said silicone elastomer; gelling said curable silicone elastomer under a vacuum of at least 600 mm Hg for at least 60 seconds in the substantial absence of either an external or in situ blowing agent thereby setting-up a foam of said curable silicone elastomer; curing said foam of said silicone elastomer at a temperature of at least 20° C., thereby providing a cured silicone elastomer foam.

4,368,280

PARTIALLY CROSS-LINKABLE COMPOSITIONS AND PROCESS FOR PREPARING PARTIALLY CROSS-LINKED THERMOPLASTIC ELASTOMERS

Hiroshi Yui; Tetsuji Kakizaki; Yashinori Nishiya, and Shinji Horie, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company, Ltd., Tokyo, Japan

Filed Dec. 31, 1980, Ser. No. 221,623
Int. Cl.³ C08L 23/26
U.S. Cl. 523—211 11 Claims

1. A partially cross-linkable composition, comprising:

(a) 100 parts by weight of a monoolefin copolymer rubber which is an essentially amorphous random copolymer of at least two monoolefins, and optionally at least one copolymerizable polyene, prepared by copolymerizing said monomers in the presence of a Ziegler-Natta catalyst;

(b) from 10 to 900 parts by weight of a substantially crystalline thermoplastic solid resin obtained by homopolymerizing an α-olefin or copolymerizing an α-olefin with at least one other olefin or other ethylenically unsaturated monomer; and

(c) from 0.1 to 40 parts by weight of a cross-linking agent, which composition is obtained by suspending a granular composition of a particle size ranging from 1 to 7 mm and essentially consisting of the monoolefin copolymer rubber (a) and the polyolefin resin (b) in an aqueous medium and impregnating the suspended granular composition with the cross-linking agent (c) under conditions which result in essentially no decomposition of the cross-linking agent.

4,368,281

PRINTED CIRCUITS

Charles R. Brummett, Harrisburg; J. A. Crumley, Enola; Ray N. Shaak, Lebanon, all of Pa., and Dewey R. Whitaker, Winston-Salem, N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 15, 1980, Ser. No. 187,102
Int. Cl.³ C08K 5/56; C09D 11/10; B41M 1/00
U.S. Cl. 523—458 12 Claims

1. An ink for printing of electronic circuits on a substrate comprising: a substrate compatible polymer base resin adhesive of a polyester, a polyimide, polyimide-amide, poly-parabanic acid, polycarbonate, polysulfones, polyamine, cellulose triacetate, polyepoxides, or polyurethane, a filler from 0 to about 16%, by weight, based on total solids content of the ink, and from about 5 to about 16%, by weight, based on total solids content of ink, a coordination complex of a metal of a formula LmZXn, wherein L is a ligand or unsaturated organic group, Z is palladium, platinum, nickel or copper metal base of the complex, X is halide, alkyl group, or bidentate ligand and m and n are integers wherein m is from 1 to 4 and n is from 0 to 3, a halogenated alkyl compound of 2 to 4 carbon atoms as a solvent for said ink, said ink having a viscosity of 80 to 2000 cps.

4,368,282

CARPET BACKING ADHESIVE

John Bogdany, Fort Oglethorp, Ga., assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Jun. 17, 1981, Ser. No. 276,102
Int. Cl.³ C08L 25/18; C09J 3/12
U.S. Cl. 524—58 2 Claims

1. In a carboxylated styrene butadiene copolymer latex based carpet backing adhesive, free of starch, the improvement comprising extending said adhesive without significant loss of tuft lock by including as an additional component of said adhesive from 1 to 30 parts by weight, based on the adhesive solids content, of a water soluble corn syrup.

4,368,283

REINFORCED RESIN COMPOSITION

Kazuo Kishida; Isao Sasaki, and Hiroshi Mori, all of Ohtake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Jun. 30, 1981, Ser. No. 279,016
Claims priority, application Japan, Jul. 15, 1980, 55-96355
Int. Cl.³ C08K 5/15
U.S. Cl. 524—109 12 Claims

1. A reinforced resin composition consisting essentially of:

(a) at least 30% by weight of a linear homopolymer of ethylene terephthalate, a copolymer of ethylene terephthalate with a minor amount of another monomer copolymerizable therewith, or a blend of said homopolymer or said copolymer,

(b) about 5 to 60% by weight of a glass fiber,

(c) about 0.03 to 5% by weight of at least one salt of an organic carboxylic acid with a metal of Groups Ia or IIa of the Periodic Table, and

(d) about 0.1 to 20% by weight of at least one sorbitan derivative which is an ester of an organic carboxylic acid and sorbitol or a polyalkylene glycol adduct thereof, the total amount of components (a) through (d) being 100% by weight.

4,368,284

POLYVINYL CHLORIDE COMPOSITE MATERIAL

Yoshihisa Tawada, Takatsuki; Minoru Ushioda, Amagasaki; Tetsuro Yamamoto, and Itaru Hatano, both of Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 18, 1979, Ser. No. 104,810
Claims priority, application Japan, Dec. 19, 1978, 53-1508155; Dec. 21, 1978, 53-159065
Int. Cl.³ C08K 3/34
U.S. Cl. 524—230 6 Claims

1. A polyvinyl chloride composite material comprising polyvinyl chloride and talc, wherein 85 percent by weight or more of said talc has a particle size of not more than 10 microns and said composite material contains a member, in an amount of from 0.1 to 30 parts by weight per 100 parts by weight of said talc, selected from the group consisting of an amide compound of the formula R^1CONHR^2, wherein R_1 is an aliphatic hydrocarbon and R^2 is an aliphatic moiety, and a polyamide having a softening point or a melting point of not higher than 200° C.

4,368,285

FAST CRYSTALLIZING POLYETHYLENE TEREPHTHALATE CONTAINING NEOPENTYL DIBENZOATE

Ernest A. Coleman, Kinnelon, N.J., assignor to Dart Industries Inc., Northbrook, Ill.

Filed Dec. 7, 1981, Ser. No. 327,852
Int. Cl.³ C08K 9/00, 10/00
U.S. Cl. 524—293 6 Claims

1. A composition comprising polyethylene terephthalate and neopentyl dibenzoate.

4,368,286

THERMOPLASTIC POLYESTER RESIN COMPOSITION WHICH IS QUICKLY CRYSTALLIZABLE

Masahiro Hayashi; Tamotsu Yoshimura, both of Machida; Seiichi Mukai; Masaharu Shikama, both of Kawasaki; Hideto Kusumoto, Machida, and Hideki Yamanouchi, Tokyo, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Mar. 18, 1981, Ser. No. 244,875

Claims priority, application Japan, Apr. 1, 1980, 55-42250

Int. Cl.³ C08G *63/02;* **C08K** *5/09*

U.S. Cl. 524—394 **9 Claims**

1. A thermoplastic resin composition which is quickly crystallizable and comprises 0.1 to 10 wt. parts of an alkali metal salt of higher fatty acid having carbon atoms of at least 26 obtained by an addition of a fatty acid to α-olefin having carbon atoms of at least 23 per 100 wt. parts of a thermoplastic polyester.

4,368,287

EMULSIFIER AND COMPOSITIONS COMPRISING SAME

Shinichi Ishikura, Kyoto; Keizou Ishii, Hyogo; Kazunori Kanda, Osaka, and Ryuzo Mizuguchi, Kyoto, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

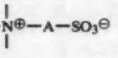
Filed Jul. 15, 1981, Ser. No. 283,743

Claims priority, application Japan, Jul. 15, 1980, 55-97190; Jul. 15, 1980, 55-97191; Jul. 15, 1980, 55-97192

Int. Cl.³ C08L *67/00*

U.S. Cl. 524—513 **7 Claims**

1. An acrylic resin emulsion which comprises an aqueous medium and particles of an acrylic resin emulsified and dispersed therein by the use of the emulsifier comprising as an essential component a polyester comprising in the molecule an amino-sulfonic acid type amphoionic group of the formula:



wherein A is a straight or branched C_1–C_6 alkylene group, a phenylene group or a substituted phenylene group.

4,368,288

FAST CRYSTALLIZING POLYESTER COMPOSITIONS

Eric Nield, Watton-at-Stone, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 159,919, Jun. 16, 1980, abandoned. This application Sep. 1, 1981, Ser. No. 298,282

Claims priority, application United Kingdom, Sep. 21, 1979, 7932818; Dec. 12, 1979, 7942879; Jan. 11, 1980, 8001009; Mar. 12, 1980, 8008300

Int. Cl.³ C08K *5/09*

U.S. Cl. 524—539 **12 Claims**

1. A fast crystallising polyester composition obtained by reacting a polyester which is a block copolyester containing the repeating polymeric segments A and B, wherein

A is a polymeric segment of ethylene terephthalate units and B is a polymeric segment having a glass-transition temperature of less than 0° C.

the concentration of the segments of A being at least 90 mole % and the concentration of the segments of B being between 0.05 and 10 mole % of the block copolyester, with an ionisable metal salt of an organic compound having at least one acidic proton and at least one aromatic ring in which the ionisable metal salt is one which, when present in polyethylene terephthalate at a concentration of 1% by weight, will:

(a) give a difference in the crystallisation peak temperatures (ΔT=Tc–Tn) of at least 100° C. measured by differential scanning calorimetry on heating (Tn) and on cooling (Tc) using heating and cooling rates of 10° C./minute, and

(b) has a melt degradation value (K value) measured in polyethylene terephthalate according to the method given in Makromol Chem 179, 2201–2209 (1978) of less than 60.

12. A polyester composition according to claim 1 containing from 5 to 80% by weight of the composition of a particulate or fibrous filler.

4,368,289

COATING COMPOSITIONS OF POLYMERS OF VINYL OXAZOLINE DRYING OIL ESTERS MADE BY AN IMPROVED PROCESS

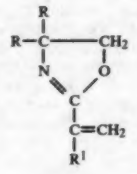
Joseph A. Vasta, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Continuation-in-part of Ser. No. 211,584, Dec. 1, 1980, Pat. No. 4,340,741. This application Dec. 9, 1981, Ser. No. 328,845

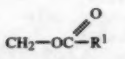
Int. Cl.³ C08L *1/10, 1/14;* **C09D** *3/74*

U.S. Cl. 524—598 **9 Claims**

1. A coating composition comprising 5–60% by weight of a polymer of polymerized ethylenically unsaturated monomers and a vinyl oxazoline drying oil ester and 40–95% by weight of a liquid; wherein the vinyl oxazoline drying oil ester is prepared by a process which comprises reacting at about 150°–225° C., in the presence of solvent, drying oil fatty acids with tris(hydroxymethyl) amino methane to form an intermediate, said intermediate being further reacted at about 175°–190° C. with a formaldehyde alcohol solution to form a solution of a vinyl oxazoline drying oil ester wherein at least 60% of the esters have vinyl groups and said esters are of the formula



where R is



and R^1 is the residue of a drying oil fatty acid;

the improvement used therewith comprises the use of at least 3 moles of formaldehyde to one mole of intermediate and about 1–5% by weight, based on the weight of the intermediate, of methanol and adding after the reaction with formaldehyde about 5–25% by weight, based on the weight of the ester solution, of an alcohol having 1–6 carbon atoms, a ketone or a mixture of said alcohol and ketone.

4,368,290

ORGANOPOLYSILOXANE-POLYETHER-VINYL GRAFT COPOLYMERS

Heinrich Alberts; Hans Friemann; Hans-Heinrich Moretto, all of Cologne, and Hans Sattlegger, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 14, 1980, Ser. No. 207,043

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1979, 2947963

Int. Cl.³ C08L *51/08, 83/10*

U.S. Cl. 525—29 **9 Claims**

1. A room temperature curable graft copolymer comprising (I) as a first polymer an organopolysiloxane with OH func-

tional groups, (II) as a second polymer a polyether, and (III) units of vinyl monomer which have been polymerized in the presence of mixtures of the first and second polymers which polymers are thereafter linked via vinyl polymer bridges.

4,368,291

PROCESS FOR THE MULTI-STAGE POLYMERIZATION OF ETHENE

Albert Frese, and Fritz Baxmann, both of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huels, A.G., Marl, Fed. Rep. of Germany

Filed Jan. 26, 1979, Ser. No. 6,814

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1978, 2803281

Int. Cl.³ C08F 2/34, 10/02

U.S. Cl. 525—53 11 Claims

1. A low pressure process for polymerizing ethene, using a Ziegler mixed catalyst, comprising (a) a titanium compound, a vanadium compound or a mixture thereof, and (b) an organoaluminum compound or a mixture thereof, in multi-stages, comprising:

polymerizing ethene in a first polymerizing stage in the liquid phase in suspension using a dispersion medium of a C_3- to C_6-hydrocarbon up to a catalytic yield of at least 25 kg of polymer per gram of Ti or V catalyst or per gram of Ti catalyst and V catalyst if both are present;

polymerizing, in a last polymerization stage, in the gas phase; and optionally, polymerizing in intermediate stages; all liquid stages preceding the gas stages;

wherein, the polymer-containing dispersion medium resulting from the last liquid stage is directly introduced into the first gas stage.

4,368,292

THERMOPLASTIC MOULDING COMPOSITIONS OF COGRAFT POLYMERS OF CELLULOSE ESTERS

Heinrich Alberts, Cologne, Fed. Rep. of Germany; Winfried Fischer, Tokyo, Japan, and Christian Leuschke, Dormagen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 14, 1981, Ser. No. 330,100

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3048696

Int. Cl.³ C08L 51/00, 1/10

U.S. Cl. 525—54.23 5 Claims

1. Thermoplastic moulding compositions consisting of

(1) 1–99% by weight of a graft substrate composed of

(a) 1–99% by weight of a (meth)acrylic acid C_1–C_{18}-alkyl ester homo- or copolymer, and

(b) 99–1% by weight of a cellulose ester of one or more aliphatic C_1–C_5 carboxylic acids, and

(2) 99–1% by weight polymerized units of

(a) 100–80% by weight of vinyl esters and/or alkyl esters of acrylic and/or methacrylic acid, and

(b) 0–20% by weight of C_2–C_4-α-olefins,

at least part of the (meth)acrylic acid ester polymer and of the cellulose ester being bridged together through polymerized units of the graft monomers, and the sum of components (1)–(2) and of components (a) and (b) being in each case 100% by weight.

4,368,293

POLYPHENYLENE ETHER COMPOSITIONS

Izumi Yamashita, Chiba, and Kunio Fukuda, Chigasaki, both of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Sep. 2, 1981, Ser. No. 298,808

Claims priority, application Japan, Sep. 9, 1980, 55-124017

Int. Cl.³ C08L 51/08, 61/04

U.S. Cl. 525—68 6 Claims

1. A polyphenylene ether composition which comprises:

(a) 80–20 weight parts of polyphenylene ether resin, and

(b) 20–80 weight parts of a rubber-reinforced polystyrene wherein 5–25 weight % of polybutadiene having 18–35% of 1,2-vinyl-structure is dispersed forming discontinuous elastomer phase.

4,368,294

PROCESS FOR PREPARING ORGANOPOLYSILOXANE MODIFIED ORGANIC POLYMERS

Bernward Deubzer, Burghausen, Fed. Rep. of Germany; Josef Esterbauer, Unterweizberg, Austria; Christian Solbrig, Mehring-Od, and Volker Frey, Burghausen, both of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 27, 1981, Ser. No. 239,226

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1980, 3008138

Int. Cl.³ C08L 83/06

U.S. Cl. 525—100 3 Claims

1. A process for preparing organopolysiloxane modified organic polymers which comprises reacting at an elevated temperature a mixture containing an organic polymer free of silicon atoms and having C-bonded hydroxyl groups with an organopolysiloxane containing groups selected from the class consisting of Si-bonded hydroxyl groups, alkyl groups which are bonded to silicon via oxygen and mixtures thereof in the presence of water which is in excess of that formed during the reaction.

4,368,295

FILMS FROM COMPOSITIONS OF POLYESTERS AND OLEFINE POLYMERS

Alan B. Newton, Welwyn Garden City; Eric Nield, Watton-At-Stone, and Vir B. Singh, Kimpton, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jun. 22, 1981, Ser. No. 276,249

Claims priority, application United Kingdom, Jul. 17, 1980, 8023364

Int. Cl.³ C08L 23/30, 67/02, 23/02

U.S. Cl. 525—166 9 Claims

1. An opaque or translucent biaxially oriented film made from a composition which comprises at least one linear polyester and 0.5 to 100% by weight based on the weight of polyester of at least one olefine polymer, wherein said composition contains at least one carboxylated polyolefine in an amount of 0.05 to 50% by weight based on the weight of olefine polymer.

4,368,296

FREE-FLOWING SINTERING POWDERS WHICH HAVE IMPROVED PROPERTIES AND ARE BASED ON TETRAFLUOROETHYLENE POLYMERS, AND A PROCESS FOR THEIR MANUFACTURE

Jürgen Kuhls, and Robert Hartwimmer, both of Burghausen/-Salzach, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Dec. 8, 1980, Ser. No. 214,465

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1979, 2949908

Int. Cl.³ C08J 3/12; C08F 214/26, 114/26

U.S. Cl. 525—276 7 Claims

1. Sinterable polymer powder consisting of 98.5 to 100% by weight of polymerized tetrafluoroethylene units and 1.5 to 0% by weight of polymerized units of at least one perfluorinated monomer in which one fluorine atom can be replaced by chlorine and which can be copolymerized with tetrafluoroethylene, which polymer powder combines the following properties: specific surface area of 5 to 11 m^2/g; standardized specific gravity of less than 2.2; flow time of less than 3.1 seconds/25 g; bulk density of 750 to 860 g/l; particle stability of 2.7 to 5 seconds/50 g; moldability index of less than 11 and deformation under load of less than 14%.

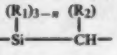
4,368,297

PAINT CONTAINING A SILYL GROUP CONTAINING VINYL RESIN, AND A METHOD OF MANUFACTURING THE SAME WITH ETHYL SILICATE AND CURING CATALYST

Yasushi Kato; Hisao Furukawa, and Naotami Ando, all of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 29, 1981, Ser. No. 278,183
Claims priority, application Japan, Jul. 11, 1980, 55-95481
Int. Cl.³ C08F 8/42; C09D 3/72
U.S. Cl. 525—342 5 Claims

1. A paint comprising a mixture of ethyl silicate; a catalyst of a metal salt of a carboxylic acid; and a silyl group containing vinyl resin having a main chain comprising substantially vinyl polymer, said resin having in each molecule at least one silyl group bonded to a hydrolyzable group, said resin containing 0.1 to 20% by weight of maleic anhydride by copolymerization, and having a molecular weight of 1,000 to 30,000, wherein said sily group is represented by the formula



wherein X represents said hydrolyzable group, (R_1) and (R_2) each represents a hydrogen atom, or an alkyl, aryl or aralkyl group having 1 to 10 carbon atoms, and n is an integer of 1,2 or 3.

4,368,298

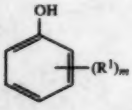
PROCESS FOR PRODUCING NOVOLAK-TYPE EPOXY RESIN

Kiyoaki Okayama, 66-15, Sasagawa 8-chome, Yokkaichi-shi, Mie-ken, and Makoto Nishizuka, 1665, Kubo-cho, Matsusaka-shi, Mie-ken, both of Japan

Filed Feb. 13, 1981, Ser. No. 234,548
Claims priority, application Japan, Feb. 20, 1980, 55-18979
Int. Cl.³ C08G 8/10, 8/28
U.S. Cl. 525—480 7 Claims

1. A process for producing a novolak-type epoxy resin, which comprises:

reacting (a) a halohydrin ether of a phenol compound of the formula



wherein R^1 represents alkyl having 1 to 9 carbon atoms which may be substituted by amino or N-alkylamino; hydroxyl; amino; amido; carboxyl; or halogen, and m represents zero or an integer of 1 to 4, provided that when m is 2 or more, the R^1 groups may be identical or different, with (b) an aldehyde compound, in the presence of an acid catalyst, the mole ratio of the aldehyde compound to the halohydrin ether being within the range of from 0.1 to 3, the equivalent ratio of the acid catalyst to the halohydrin ether being within the range of from 0.01 to 1.0, and

treating the resultant halohydrin etherified novolak with at least one cyclizing agent selected from the group consisting of sodium hydroxide and potassium hydroxide, the amount of the cyclizing agent being within the range of from 0.9 to 1.5 moles per mole of hydrogen in the halohydrin etherified novolak, to form an epoxy ring.

4,368,299

EPOXY RESIN COMPOSITIONS

Katsuyoshi Watanabe, Nara; Makoto Andoh, Suita; Yasuhisa Saito, Toyonaka; Yasuteru Maeda, Ibaraki, and Yoshiya Fukuyama, Minoo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 23, 1981, Ser. No. 285,979
Claims priority, application Japan, Aug. 7, 1980, 55-108960; Aug. 7, 1980, 55-108961; Jan. 20, 1981, 56-7578
Int. Cl.³ C08L 61/12, 63/00
U.S. Cl. 525—481 7 Claims

1. A composition comprising an epoxy resin having at least two epoxy groups in the molecule and a hardener selected from the group consisting of (1) a resorcinol novolak having an unreacted resorcinol content of 10% by weight or less, (2) a mixed novolak of a resorcinol novolak and a monohydric phenol novolak having a total unreacted resorcinol and monohydric phenol content of 8% by weight or less wherein the mixed novolak has a resorcinol novolak content of 10% by weight or more, and (3) a resorcinol/monohydric phenol polycondensation novolak having a polycondensed resorcinol content of 30 mole % or more and a total unreacted resorcinol and monohydric phenol content of 8% by weight or less, wherein the weight ratio of the epoxy resin to the hardener is such that a ratio of the number of phenolic hydroxyl groups present in the hardener to that of the epoxy groups present in the epoxy resin ranges from 0.5:1 to 1.5:1.

4,368,300

PHOTOSETTING COMPOSITION CONTAINING MODIFIED EPOXY RESINS AND AN OLIGOESTER DIACRYLATE COMPOUND

Tsunetomo Nakano; Kazuaki Nishio; Hiroshi Watanabe, and Hiroshi Yasuno, all of Ichihara, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Filed Dec. 3, 1981, Ser. No. 326,841
Claims priority, application Japan, Dec. 12, 1980, 55-174509
Int. Cl.³ C08L 63/00
U.S. Cl. 525—531 26 Claims

1. A photosetting composition comprising:

A. 100 parts by weight of a first epoxy component comprising at least one unsaturated acid-modified epoxy compound which has been prepared by the modification reaction of a bisphenol type epoxy resin with an unsaturated acid compound having at least one acryloyl radical;

B. 30 to 400 parts by weight of an oligoester component comprising at least one oligoester diacrylate compound which has been prepared by the reaction of acrylic acid with an oligoester of an aromatic polycarboxylic acid with an organic dihydroxyl compound and which has a molecular weight of 420 or more and is in the form of a liquid at room temperature;

C. 50 to 1200 parts by weight of a photopolymerizable monomeric component comprising at least one photopolymerizable acrylate type monomeric compound having a molecular weight of 100 to 400 and being in the form of a liquid at room temperature;

D. 5 to 400 parts by weight of a second epoxy component comprising at least one epoxy compound selected from the group consisting of (1) bisphenol type epoxy resins having a softening point of from 50° C. to 150° C. and (2) saturated carboxylic acid-modified epoxy compounds which have been prepared by the modification reaction of bisphenol type epoxy resins with saturated hydrocarbon carboxylic acids and which have a softening point of 50° C. to 150° C., and;

E. a photopolymerization initiator in an amount of 0.5% to 15% based on the entire weight of said photosetting composition.

4,368,301

SOLUBILIZED CHROMIUM SALT IN POLYMERIZATION CATALYST

Gil R. Hawley, and Max P. McDaniel, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 103,686, Dec. 14, 1979, Pat. No. 4,333,860. This application Aug. 28, 1981, Ser. No. 297,455

Int. Cl.³ C08F 4/24

U.S. Cl. 526—100 13 Claims

1. A process comprising:

contacting a chromium-containing salt, which is insoluble in nonaqueous solvents which do not easily rehydrate silica, with a solubilizing agent thus converting it to a chromium-containing complex having charged ions which is soluble in said nonaqueous solvents;

impregnating a particulate support with the thus solubilized chromium-containing complex dissolved in a nonaqueous solvent which does not easily rehydrate silica;

activating said thus impregnated support by heating same in an oxygen ambient at a temperature sufficient to oxidize at least a portion of said chromium to produce a catalyst;

contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule with said catalyst under polymerization conditions; and

recovering a polymer.

4,368,302

POLYMERIZATION PROCESS AND PRODUCTS THEREFROM

Gordon W. Downs, Falkirk, Scotland, assignor to BP Chemicals Limited, London, England

Filed Mar. 25, 1980, Ser. No. 133,824

Claims priority, application United Kingdom, Mar. 28, 1979, 7911257

The portion of the term of this patent subsequent to Feb. 24, 1998, has been disclaimed.

Int. Cl.³ C08F 4/24, 10/02

U.S. Cl. 526—105 15 Claims

1. A process for polymerising ethylene or a mixture of ethylene with up to 40 wt % (based on total monomer) of other 1-olefinic monomer comprising (a) supporting chromium oxide, or a compound calcinable thereto, on a refractory oxide support material, (b) adding one or more tetravalent titanium compounds selected from (1) TiO_2, (2) $TiOCl_2$, (3) titanium acetyl acetonate compounds, (4) alkanolamine titanates and (5) compounds having the general formula $Ti(OR)_mX_n$, wherein m+n is 4, m is zero or an integer from 1 to 4, R is an organic hydrocarbon group and when the titanium compound contains more than one R or Y group the groups may be the same of different (c) heating the product under such conditions that an active polymerisation catalyst is formed, (d) and contacting the monomer with the active polymerisation catalyst in the presence of (6) one or more organometallic compounds having the general formular $MR^2_pY_{q-p}$ wherein M is a metal of groups 1A, 2A, 2B or 3A of the Periodic Table (Mendeleef), R^2 is a hydrocarbon group containing 1 to 10 carbon atoms, Y is hydrogen or halogen, q is the valency of M, p is an integer from 1 to q inclusive and when the organometallic compound contains more than one R^2 or Y group they may be the same or different, and (7) a polyene modifier.

4,368,303

TITANIUM IMPREGNATED SILICA-CHROMIUM CATALYSTS

Max P. McDaniel, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 118,893, Feb. 6, 1980, Pat. No. 4,294,724. This application May 29, 1981, Ser. No. 268,318

Int. Cl.³ C08F 4/02, 4/24

U.S. Cl. 526—106 27 Claims

1. A polymerization process compairing contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule with a catalyst produced by:

(a) forming a silica hydrogel containing a pore preserving agent selected from (1) organic silicon compounds having the structure R_nSiA_{4-n} wherein n is an integer of 2 or 3, and wherein each R is a saturated or unsaturated hydrocarbon group wherein each R can be the same or different and wherein A is selected from the group consisting of hydroxy radicals, halides and alkoxy radicals in which the alkyl group therein contains from 1 to about 10 carbon atoms, (2) water soluble inorganic acids which are sufficiently ionized to produce a pH of 0 to 3.5, (3) organic acids having an acid strength equal to or greater than that of acetic acid, and (4) anionic, cationic or non-ionic surfactants;

(b) drying said hydrogel by means of air oven drying, spray drying, tray drying, vacuum oven drying or drying under a heat lamp to form a xerogel;

(c) anhydrously incorporating a titanium compound into said xerogel;

(d) wherein chromium is introduced by either coprecipitating same with said silica hydrogel, by combining a water-soluble chromium compound with said hydrogel, or adding anhydrous solution of a chromium compound soluble in non-aqueous solvents to said xerogel; and

(e) after said drying of (b) and after said chromium of (d) is introduced, activating the resulting dried, chromium-containing composition by means of an activation procedure which comprises treatment at an elevated temperature in an atmosphere containing oxygen.

4,368,304

PROCESS FOR PRODUCING α-OLEFIN POLYMERS

Akihiro Sato, Chibaken; Toshihiro Uwai, Ichiharashi; Tohru Hanari, Ichiharashi; Kazutsune Kikuta, Ichiharashi, and Masazumi Miyajima, Ichiharashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

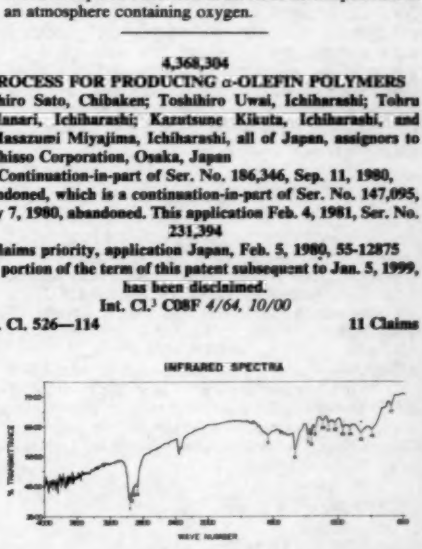
Continuation-in-part of Ser. No. 186,346, Sep. 11, 1980, abandoned, which is a continuation-in-part of Ser. No. 147,095, May 7, 1980, abandoned. This application Feb. 4, 1981, Ser. No. 231,394

Claims priority, application Japan, Feb. 5, 1980, 55-12875

The portion of the term of this patent subsequent to Jan. 5, 1999, has been disclaimed.

Int. Cl.³ C08F 4/64, 10/00

U.S. Cl. 526—114 11 Claims



1. A process for producing α-olefin polymers which comprises:

reacting one mole of an organoaluminum compound with 0.1 to 8 mols of an electron donor in a solvent at a temperature of −20° to 200° C., to obtain a reaction product (I);

reacting this reaction product (I) with $TiCl_4$ at a temperature of 10° to 90° C. in a ratio of the number of Al atoms to that of Ti atoms of 0.05 to 10, and thereafter removing a liquid portion from the resulting material followed by washing to thereby obtain a solid product (II) having no free $TiCl_4$;

reacting 100 g of this solid product (II) with 10 to 1,000 g of an electron donor and 10 to 1,000 g of an electron acceptor at a temperature of 40° C. to 200° C. to obtain a solid product (III); and

polymerizing an α-olefin or α-olefins in the presence of a catalyst comprising a combination of said solid product (III) with an organoaluminum compound, said catalyst being a preliminarily activated one obtained by further reacting an α-olefin with said combination.

4,368,305

PROCESS FOR PRODUCING OLEFIN POLYMERS

Toru Tanaka, Komae, and Eiji Tanaka, Kawasaki, both of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

PCT No. PCT/JP80/00006, § 371 Date Aug. 1, 1980, § 102(e) Date Aug. 1, 1980, PCT Pub. No. WO80/01485, PCT Pub. Date Jul. 24, 1980

PCT Filed Jan. 17, 1980, Ser. No. 213,998

Claims priority, application Japan, Jan. 18, 1979, 54-4307; Feb. 2, 1979, 54-11287

Int. Cl.³ C08F *4/64, 10/02*

U.S. Cl. 526—116 **9 Claims**

1. A process for producing olefin polymers having a wide and controllable molecular weight distribution, comprising: polymerizing an olefin in the presence of a catalyst which comprises (A) a solid catalytic component separated from the reaction mixture obtained by reacting (a) an organoaluminum compound with a liquid material obtained by mixing (b) a vanadium compound selected from the group consisting of vanadium halides and oxygen-containing organovanadium compounds, (c) a hafnium compound selected from the group consisting of hafnium halides and oxygen-containing organohafnium compounds, and (d) a titanium compound selected from the group consisting of titanium halides and oxygen-containing organotitanium compounds in the presence or absence of a diluent, the relative amounts of said vanadium, hafnium and titanium in said solid catalyst component meeting the relationships: $0.1<Hf/Ti<10$, $0.1<(Hf+Ti)/V<100$ and (B) an organoaluminum compound.

4,368,306

PROCESS AND CATALYST FOR THE POLYMERIZATION OF α-OLEFINS

Dieter Kurz, Burghausen, Fed. Rep. of Germany, assignor to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed May 1, 1981, Ser. No. 259,538

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1980, 3025760

Int. Cl.³ C08F *4/02, 10/00*

U.S. Cl. 526—125 **17 Claims**

1. An improvement in the process for the polymerization of an at least one α-olefin comprising reacting said α-olefin under elevated temperatures and pressures in the presence of a solid polymerization catalyst consisting essentially of a solid compound containing:

(1) titonium

(2) magnesium,

(3) halogen,

(4) oxygen, and possibly

(5) element(s) of the II and/or III main group(s) of the Mendeleev Periodic Table,

which solid compound is activated with at least one organometallic compound where said metal is from the II and/or III main group(s) of the Mendeleev Periodic Table, and recovering a polymerizate, the improvement consisting of preparing said solid compound prior to activation, by reacting a primary solid containing magnesium and halogen prepared from at least one hydrocarbon-soluble magnesium compound and at least one halogen compound selected from the group consisting of a chlorohydrocarbon having from 1 to 6 carbon atoms of which at least one carbon atom has at least two directly bonded chlorine atoms, a carbon chloride compound having from 1 to 6 carbon atoms, and mixtures thereof, in two successive and separate reacting stages A and B, in either order, where a solid based on magnesium compound(s) is reacted in reaction stage A in suspension in at least on liquid hydrocarbon with:

(i) at least one peroxy compound selected from the group consisting of dialkyl peroxides, alkyl hydroperoxides, and mixtures thereof, and

(ii) at least one halogen-containing titanium compound of the formula:

$$X_aTi(OR^4)_{4-a}$$

wherein X represents halogen, R^4 is a substituent selected from the group consisting of alkyl having from 1 to 8 carbon atoms and hydrocarbon aryl having from 6 to 8 carbon atoms, and a is 2, 3 or 4,

and, in reaction stage B, a solid based on magnesium compound(s) in suspension in at least one liquid hydrocarbon is reacted with:

(i) at least one halogen-containing titanium compound of the formula:

$$X'_bTi(OR^3)_{4-b}$$

wherein X' represents halogen, R^3 represents a substituent selected from the group consisting of alkyl having from 1 to 8 carbon atoms and hydrocarbon aryl having from 6 to 8 carbon atoms, and b is 2, 3 or 4, and

(ii) at least one organoaluminum compound,

whereby a polymerizate is recovered having a broad molecular weight distribution.

4,368,307

PROCESS FOR THE PRODUCTION OF VINYL CHLORIDE POLYMERS

Gilbert Sielfeld, and Paul Sunder-Plassmann, both of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huls AG, Marl, Fed. Rep. of Germany

Filed Sep. 11, 1981, Ser. No. 301,270

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1980, 3036101; Sep. 25, 1980, 3036127

Int. Cl.³ C08F *2/00*

U.S. Cl. 526—202 **13 Claims**

1. In a process for preparing a vinyl chloride resin by polymerizing vinyl chloride alone or with up to 20% by weight of other polymerizable unsaturated monomers, in an aqueous suspension, in the presence of a monomer-soluble free radical catalyst and a suspension stabilizer which is partially hydrolyzed polyvinyl acetate or cellulose ether, the improvement wherein the polymerization is conducted in the presence of 0.01–0.5% by weight, based on the amount of monomer to be polymerized, of a cosuspension stabilizer which is a copolymer of

(a) 2-n-propyl-Δ^2-oxazoline, 2-isopropyl-Δ^2-oxazoline or both, and

(b) 2-methyl-Δ^2-oxazoline, 2-ethyl-Δ^2-oxazoline or both,

the copolymer having a viscosity number of 35–70 (ml/g), measured at 25° C. in an isopropanol/water mixture (50 vol-% of isopropanol), in a concentration of 0.5% (weight/volume of the solution).

4,368,308

FLUORINE-CONTAINING ELASTOMER HAVING EXCELLENT LOW TEMPERATURE RESISTANCE AND OIL RESISTANCE

Masaaki Yamabe, Machida; Shun-ichi Kodama, Yokohama, and Gen Kojima, Machida, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Jul. 1, 1981, Ser. No. 279,543

Claims priority, application Japan, Jul. 8, 1980, 55-92272

Int. Cl.³ C08F *216/24*

U.S. Cl. 526—247 **2 Claims**

1. A fluorine-containing elastomer having excellent low temperature resistance and oil resistance which comprises

ethylene units (E) and fluorovinyl ether units (FV) having the formula CF_2=CFOX (X represents a C_1–C_9 perfluoro-alkoxy-alkyl group which can have one or more ether bond) at a molar ratio of (E) to (FV) of 95:5 to 30:70 and at a total content of (E) and (FV) of at least 70 mole %.

4,368,309

POLYMERS OF VINYL OXAZOLINE DRYING OIL ESTERS MADE BY AN IMPROVED PROCESS

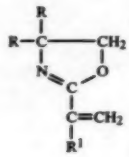
Joseph A. Vasta, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Continuation-in-part of Ser. No. 211,584, Dec. 1, 1980, Pat. No. 4,340,741. This application Dec. 9, 1981, Ser. No. 328,844

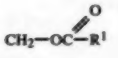
Int. Cl.³ C08L 1/10, 1/14; C09D 3/74

U.S. Cl. 526—258 8 Claims

1. A polymer comprising polymerized ethylenically unsaturated monomers and a vinyl oxazoline drying oil ester; wherein the vinyl oxazoline drying oil is prepared by a process which comprises reacting at about 150°–225° C., in the presence of solvent, drying oil fatty acids with tris(hydroxymethyl) amino methane to form an intermediate, said intermediate being further reacted at about 175°–190° C. with a formaldehyde alcohol solution to form a solution of a vinyl oxazoline drying oil ester wherein at least 60% of the esters have vinyl groups and are of the formula



where R is



and R^1 is the residue of a drying oil fatty acid;

the improvement used therewith comprises the use of at least 3 moles of formaldehyde to one mole of intermediate and about 1–5% by weight, based on the weight of the intermediate, of methanol and adding after the reaction with formaldehyde about 5–25% by weight, based on the weight of the ester solution, of an alcohol having 1–6 carbon atoms, a ketone or a mixture of said alcohol and ketone.

4,368,310

METHOD OF POLYMERIZING SHEETS

Ivan R. Leatherman, Wadsworth, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 23, 1981, Ser. No. 314,265

Int. Cl.³ C08F 18/24

U.S. Cl. 526—314 4 Claims

1. A method of polymerizing aliphatic diol bis(allyl carbonate) monomer to form polymers thereof comprising:

providing a pool of liquid in which the monomers and the polymers to be formed are substantially insoluble;

forming a layer of monomer and initiator atop the pool of liquid; and

thereafter recovering polymer from atop the pool of liquid.

4,368,311

ACCELERATOR FOR HARDENING UNSATURATED RESINS

Klaus Binder, Munich; Wolfgang Edl, Grossbesselohe, and Hansjoachim Twittenhoff, Straubing, all of Fed. Rep. of Germany, assignors to Peroxid-Chemie GmbH, Hoellriegelskreuth, Fed. Rep. of Germany

Filed Apr. 10, 1981, Ser. No. 252,716

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1980, 3016051

Int. Cl.³ C08F 4/00, 4/10, 4/26; C08J 3/24

U.S. Cl. 526—317 21 Claims

1. Accelerator for hardening unsaturated resins, comprising a mixture of at least one ketimine and at least one inorganic or organic cupric or ferric compound.

4,368,312

EMBEDDING MEDIUM SUITABLE FOR THE PREPARATION OF THIN SECTIONS OF EMBEDDED BIOLOGICAL MATERIALS

Eric Carlemalm, Therwil, Switzerland, assignor to Chemische Werke Lowi G.m.b.H., Waldkraiburg, Fed. Rep. of Germany

Filed Mar. 9, 1981, Ser. No. 242,025

Int. Cl.³ C08F 120/10

U.S. Cl. 526—323.2 4 Claims

1. A method of producing an essentially nonpolar embedding medium, which consists essentially of the step of admixing ethylmethacrylate, n-hexylmethacrylate, triethyleneglycoldimethacrylate and a free radical polymerisation initiator at a ratio by weight of ethylmethacrylate:n-hexylmethacrylate of 3.3 to 5.4:1, a ratio by weight of the combined ethylmethacrylate and n-hexylmethacrylate:triethyleneglycoldimethacrylate of 3.77 to 9.38:1, and the polymerisation initiator being included in the mixture in a small amount of from about 0.1% to about 1% by weight based on the total weight of the resulting embedding medium, the purity of each of the components being at least 90% by weight.

4,368,313

STABILIZATION OF SILANOL HYDROLYSATES OF ORGANOSILANES

Susan E. Hayes, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Sep. 18, 1981, Ser. No. 303,340

Int. Cl.³ C08G 77/06

U.S. Cl. 528—14 34 Claims

1. A method of stabilizing silanol hydrolysates of organosilanes in an acid medium comprising:

(a) adding a neutralizing agent containing a chelatable metal ion to the acid medium containing a silanol hydrolysate of organosilane to reduce the acidity of the medium to a pH of from about 6.5 to about 7.0;

(b) removing solids from the medium; and

(c) adding a chelate agent to form a chelate with metal in the medium.

4,368,314

CURABLE COMPOSITION COMPRISING SPIRO-ORTHOESTER COMPOUND

Takeshi Endo, Yokohama; Kiyokazu Mizutani, Inasawa, and Takahisa Ogasawara, Tokai, all of Japan, assignors to Toagosei Chemical Industry Co., Ltd., Tokyo, Japan

Filed Aug. 24, 1981, Ser. No. 295,739

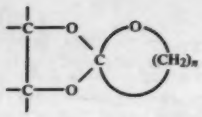
Claims priority, application Japan, Aug. 29, 1980, 55-118283; Oct. 13, 1980, 55-142042

Int. Cl.³ C08G 59/26, 63/42

U.S. Cl. 528—89 29 Claims

1. A curable composition comprising:

(A) at least one spiro-orthoester compound having at least one spiro-orthoester group represented by the formula:



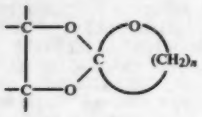
[I]

wherein n is an integer of 3–5,

(B) at least one curing agent selected from the group consisting of organic polybasic acids and their anhydrides.

2. A curable composition comprising:

(A) at least one spiro-orthoester compound having at least one spiro-orthoester group represented by the formula:



[I]

wherein n is an integer of 3–5,

(B) at least one curing agent selected from the group consisting of organic polybasic acids and their anhydrides, and

(C) an epoxy compound having at least one epoxy group.

4,368,315

CATALYZED INTERFACIAL POLYCONDENSATION POLYCARBONATE PROCESS

Subhas K. Sikdar, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 27, 1981, Ser. No. 258,144

Int. Cl.³ C08G *63/62*

U.S. Cl. 528—198 **11 Claims**

1. An improved interfacial polycondensation polycarbonate process wherein at least one dihydric phenol is reacted with a carbonyl halide in the presence of a polycondensation caralyst, the improvement comprising carrying out the process in accordance with the following process sequence and parameters:

(1) forming an equilibrated substantially uniform agitated two-phase admixture containing

(i) an organic phase containing an inert solvent and a polycondensation catalyst,

(ii) an aqueous phase containing dissolved therein an aromatic dihydroxy compound, a strong base, and having a pH of at least about 11, subject to the proviso that,

(a) the volume ratio of inert organic solvent phase to aqueous phase is within the range of from 0.04:1 to 0.20:1, and

(b) the mol ratio of base to aromatic dihydroxy compound is at least about 0.25:1,

(2) adding and reacting to carbonyl halide with the aromatic dihydroxy compound to form an aromatic polycarbonate having a M_w of at least about 2000 and an M_w/M_n of less than about 6.0, and

(3) separating and recovering the solid aromatic polycarbonate particulate from the liquid aqueous phase.

4,368,316

PROCESS FOR THE PREPARATION OF HIGH-SOLIDS ROSIN-MODIFIED POLYESTERS

Sudhir L. Laddha, North Bergen, and Theodore Sulzberg, Highland Park, both of N.J., assignors to Sun Chemical Corporation, New York, N.Y.

Filed Jun. 2, 1980, Ser. No. 155,659

Int. Cl.³ C08G *63/48*

U.S. Cl. 528—295.5 **7 Claims**

1. A process for preparing a 100%-solids polyester which consists of the steps of (1) heating at about 250° to 290° C. (a) a polyol, (b) a monobasic aliphatic carboxylic acid, and (c) rosin or a modified rosin until a product having an acid number of about 1 to 10 is obtained; (2) heating at about 150° to 210° C. the product of step (1) with (d) a polycarboxylic acid or anhydride; and (3) recovering a 100%-solids polyester product having an acid number of about 20 to 90, a hydroxyl number of about 20 to 400, and a molecular weight of about 100 to 1500.

4,368,317

MIXTURES FOR THE PREPARATION OF NITROGEN-CONTAINING POLYADDUCTS

Friedrich Lohse, Oberwil, and Dieter Trachsler, Kaiseraugst, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 11, 1981, Ser. No. 262,571

Claims priority, application Switzerland, May 23, 1980, 4055/80

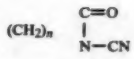
Int. Cl.³ C08G *69/14*

U.S. Cl. 528—323 **9 Claims**

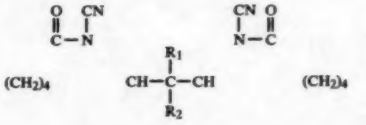
1. A mixture for the preparation of crosslinked nitrogen-containing polyadducts, which mixture contains

(a) a N-cyanolactam of the formula I or II

(I)



(II)



in which n is an integer from 2 to 11, the methylene carbon atoms are unsubstituted or substituted, in total, by one or two methyl or ethyl groups, and R_1 and R_2, independently of one another, are hydrogen or methyl, and

(b) a monomeric or oligomeric organic compound having not less than 2 C atoms and not less than 2 hydroxyl groups.

4,368,318

PREPARATION OF DODECALACTAM POLYMERS WHEREIN MOLTEN MONOMER IS FILTERED PRIOR TO POLYMERIZATION

Marina K. Dobrokhtova, Dubininskaya ulitsa, 6, kv. 93; Bladimir A. Evseev, Kupavinsky Proezd, 4-32; Evgeny S. Artsis, Samotechnaya ulitsa, 17-A-79; Gennady A. Enenshtein, ulitsa Chernyshevskogo, 25, kv. 9; Boris P. Cheburashko, Kashirskoe shosse, 92-3-424; Maria G. Platoshkina, Dorozhnaya ulitsa, 28-1-145, all of Moscow; Vladimir P. Nefedov, ulitsa Ijulskaya, 48-27, Sverdlovsk, and Ljudmila I. Valyshkina, Ryazansky prospekt, 60-141, Moscow, all of U.S.S.R.

Filed Sep. 5, 1980, Ser. No. 184,423

Int. Cl.³ C08G *69/16*

U.S. Cl. 528—326 **7 Claims**

1. A method for preparing solid polydodecanamide and copolymers based thereon comprising

melting ω-dodecalactam or a mixture of ω-dodecalactam and polyamide-forming monomer copolymerizable therewith,

filtering the resulting melt through a bed comprising solid oxidized particles of ω-dodecalactam having an elemental oxygen content of from 10 to 24% by weight and,

polymerizing said melt at a temperature of 180° to 320° C. in

contact with a polymerization catalyst for ω-dodecalactam.

4,368,319

ELECTRICALLY CONDUCTIVE CYCLIC POLYIMIDES

Jürgen Hocker, Bergisch-Gladbach; Rudolf Merten, Leverkusen, and Hans G. Fitzky, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

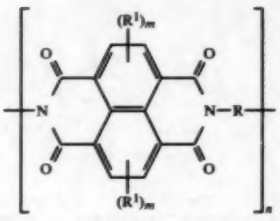
Filed Jan. 2, 1981, Ser. No. 222,084

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1980, 3000168

Int. Cl.³ C08G 69/28, 69/32

U.S. Cl. 528—353 2 Claims

1. A film-forming polymeric cyclic polyimide of the formula



wherein R is a divalent aliphatic group containing an electron donor; R^1 is hydrogen, halogen, —CN, $—NO_2$, $—COOR^2$, $—N(R^3)_2$ or $—OR^4$; R^2 is alkyl having 1 to 6 carbon atoms; R^3 and R^4 independently are hydrogen or alkyl having 1 to 6 carbon atoms; m is 1 or 2 and n is an integer of from 10 to 500.

4,368,320

PROCESS FOR THE PRODUCTION OF A HYDROXYL GROUP CONTAINING ε-CAPROLACTONE MODIFIED (METH) ACRYLATE RESIN

Werner Aldinger, Freigericht-Horbach; Helmut Anzt, Hanau; Gerhard Morlock, Hanau, and Hans-Peter Schaufler, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jul. 17, 1981, Ser. No. 284,255

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1980, 3027776

Int. Cl.³ C08G 63/08; C08F 218/02

U.S. Cl. 528—355 22 Claims

1. A process for the production of a hydroxyl group containing, ε-caprolactone modified, isocyanate cross-linkable acrylate, or methacrylate resin comprising

(1) reacting at least one monoester of acrylic acid or methacrylic acid with an alkanediol having 2 to 4 carbon atoms in the molar ratio of 1.5:1 to 1:3 with ε-caprolactone at a temperature between 60° and 130° C. in the presence of 0.005 to 0.15 weight percent based on the weight of the ε-caprolactone employed of an organotin compound catalyst for the reaction of a hydroxyl group containing compound with ε-caprolactone and

(2) copolymerizing

(a) 15 to 55 weight percent of the adduct obtained according to (1) with

(b) 45 to 85 weight percent of a mixture of monomers which is composed of, in each case based on the weight of component (b),

(b_1) 10 to 90 weight percent of at least one ester of methacrylic acid whose homopolymerizate has a glass transition temperature of above 60° C.,

(b_2) 10 to 90 weight percent of at least one ester of acrylic or methacrylic acid whose homopolymerizate has a glass transition temperature of below 60° C.,

(b_3) 0 to 35 weight percent of at least one vinyl aromatic compound and

(b_4) 0 to 10 weight percent of at least one monoester of acrylic or methacrylic acid with an alkanediol having 2 to 4 carbon atoms as a solution in

(c) 15 to 45 weight percent based on the total weight of components (a), (b), and (c) of at least one solvent for the acrylate or methacrylate resin which solvent is inert to isocyanates, in the presence of at least one catalyst which decomposes thermally into radicals.

4,368,321

ELEVATED, DECLINING PRESSURE DEHYDRATION OF POLY(ARYLENE SULFIDE) PREPOLYMERIZATION MIXTURE

Fred T. Sherk, and Harry B. Hammer, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 1, 1981, Ser. No. 298,442

Int. Cl.³ C08G 75/14

U.S. Cl. 528—388 12 Claims

1. A method in the preparation of poly(arylene sulfide) for dehydrating pre-polymerization mixtures comprising a reaction mixture of a sulfur source and an organic amide, said method comprising:

(a) contacting a reaction mixture comprising a sulfur source and an organic amide at a first pressure within a range of about 20 psig to about 60 psig and an initial temperature in the range of about 300° F. to about 400° F. for a time sufficient for formation of a complex of the reactants, and subsequently

(b) simultaneously, over a period of time, decreasing said pressure to a second pressure within the range of about 3 to about 25 psig and increasing the temperature to a final temperature, at which, at the second pressure, essentially all water is removed from the mixture.

4,368,322

CHITOSAN-GLUCAN COMPLEX, METHOD FOR ITS PRODUCTION AND END USES

Riccardo Muzzarelli, Ancona-Sap-Anico, Italy, assignor to Anic, S.p.A., Palermo, Italy

Division of Ser. No. 45,002, Jun. 4, 1979, Pat. No. 4,282,351. This application Feb. 23, 1981, Ser. No. 237,082

Claims priority, application Italy, Jun. 14, 1978, 625 A/78

Int. Cl.³ C08B 37/08

U.S. Cl. 536—20 4 Claims

1. A chitosan-glucan complex having the infrared spectrum shown in FIG. 1A produced by the process comprising treating a biomass selected from yeast, mold or fungus containing chitin and glucan with a solution of a strong alkali having a concentration of 30 to 50% at a temperature up to the boiling point of said solution.

4,368,323

SUBSTANTIVE WETTING AGENTS FOR ABSORBENT MATERIALS

Richard P. James, Cranbury, N.J., assignor to Personal Products Company, Milltown, N.J.

Filed Sep. 21, 1981, Ser. No. 303,752

Int. Cl.³ A61F 13/16, 13/20; C08B 11/00

U.S. Cl. 536—56 11 Claims

1. A method for treating an absorbent material having accessible hydroxyl groups to increase wettability comprising reacting said absorbent material with a surfactant having functional end groups selected from the group consisting of primary amine or hydroxyl groups and a diepoxide compound.

4,368,324

SIZING AGENT AND PROCESS FOR THE MANUFACTURE THEREOF

Friedrich J. Bayerlein; Peter P. Habereder, both of Krailling; Maria Denkler, Munich, and Nikolaos Keramaris, Eichenau, all of Fed. Rep. of Germany, assignors to Diamalt Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 13, 1981, Ser. No. 253,487

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1980, 3016561

Int. Cl.³ C08B *37/00*; D06M *15/04*

U.S. Cl. 536—114 **12 Claims**

5. A method for preparing a water-soluble sizing agent which comprises hydroxyalkylating and depolymerizing the polysaccharide gum obtained from the seed of *Cassia occidentalis* to obtain a sizing agent having a viscosity of from about 40 to about 10,000 mPas (10% aqueous solution, 80° Brookfield RVT) and a substitution degree of from 0.05 to about 1.0.

4,368,325

PROCESSES FOR PREPARING 3-CEPHEM COMPOUNDS

Ikuo Ueda, Toyonaka, and Masakazu Kobayshi, Ikeda, both of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

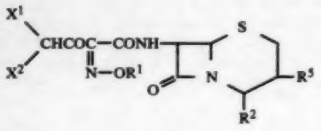
Filed Mar. 4, 1981, Ser. No. 240,469

Claims priority, application Japan, Mar. 6, 1980, 55/29676

Int. Cl.³ C07D *501/20*

U.S. Cl. 544—16 **7 Claims**

1. A syn compound of the formula:



(III")

wherein

R^1 is an aliphatic hydrocarbon group which may have suitable substituent(s),

R^2 is carboxy or protected carboxy,

R^5 is hydrogen or hydroxy,

X^1 and X^2 are each halogen, and

the dotted line represents cepham or cephem nucleus,

or a salt thereof.

4,368,326

SHORT TOTAL SYNTHESIS OF DIHYDROTHEBAINONE, DIHYDROCODEINONE, AND NORDIHYDROCCODEINONE

Kenner C. Rice, 14704 Red Fox Rd., Rockville, Md. 20852

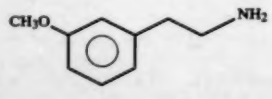
Continuation-in-part of Ser. No. 165,690, Jul. 3, 1980, abandoned. This application Feb. 19, 1982, Ser. No. 350,221

Int. Cl.³ C07D *489/02, 221/28, 217/20*

U.S. Cl. 546—45 **1 Claim**

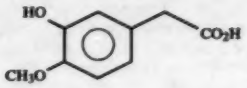
1. A method which comprises

(a) heating a mixture of an amine compound of the formula 4



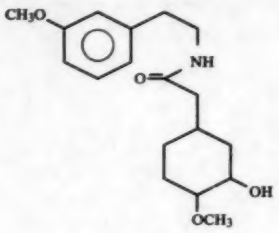
4

and pure acid compound, formula 5



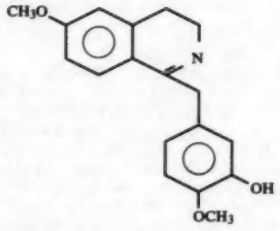
5

at 200° C. for about 2 hours under argon or other inert gas to obtain amide compound 6 of the following formula



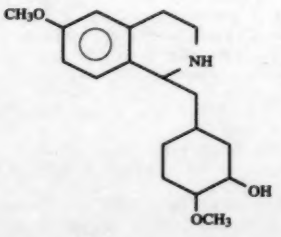
6

(b) contacting compound 6 with phosphorus oxychloride to produce the 1,2-dehydro derivative of compound 7 shown below:



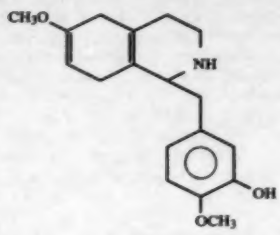
which need not be isolated;

(c) neutralizing the 1,2-dehydro derivative of compound 7 with aqueous ammonia and reducing with sodium cyanoborohydride or sodium borohydride to give the compound tetrahydroisoquinoline 7



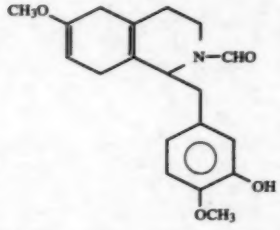
7

(d) treating of 7 with lithium or sodium in liquid ammonia as a reducing agent to give hexahydroisoquinoline, compound 8



8

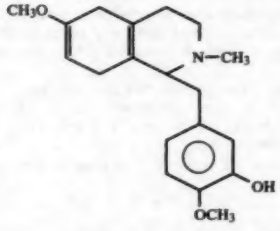
and formylating compound 8 to give 10



10

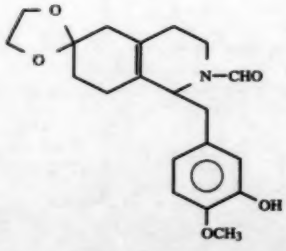
and introducing a protective group for the nitrogen in the subsequent steps of the reaction where the reagent for formylation of 8 to 10 is phenyl formate or chloral;

(e) alternately, N-methylating compound 7 or 8 by treatment with methyl halides or sulfonate to give the N-methyl derivative of 7 or compound 9



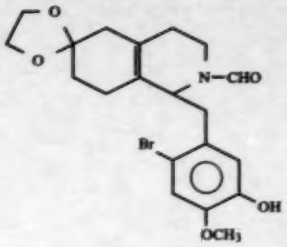
9

(f) contacting compound 10 with ethylene glycol in dry methane sulfonic acid in dry tetrahydrofuran to afford the ketal product, 11



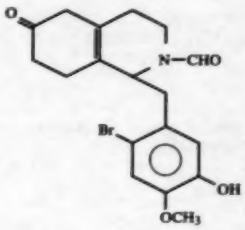
11

(g) brominating of ketal 11 with N-bromoacetamide (NBA) to give bromo ketal 12



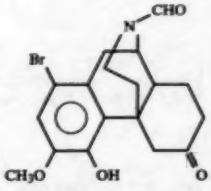
12

(h) deketalizing bromo ketal 12 with aqueous acid such as aqueous formic acid to yield beta, gamma unsaturated ketone 13



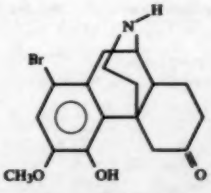
13

(i) treating beta, gamma unsaturated bromo ketone 13 with a super acid alone or with ammonium fluoride HF complex with trifluoromethanesulfonic acid to give 1-bromo-N-formylnordihydrothebainone 17



17

(j) acid hydrolyzing 1-bromo-N-formylnordihydrothebainone 17 with aqueous acid and methanol to give the intermediate 1-bromonordihydrothebainone, compound 18

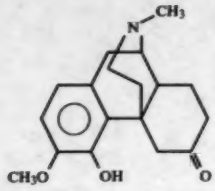


18

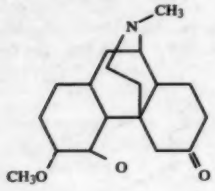
(k) converting intermediate 18, 1-bromonordihydrothebainone, to dihydrothebainone 19, a codeine precursor by hydrogenation in the presence of formaldehyde with palladium on carbon catalyst in 2-normal (2 N) acetic acid containing sodium acetate; or

(l) treating intermediate 18 with bromine and acetic acid followed by treating sodium hydroxide to close the oxide bridge and afford as an intermediate 1-bromonordihy-

drocodeinone which need not be isolated but is hydrogenated in the presence of formaldehyde to give dihydrocodeinone 22, a codeine precursor



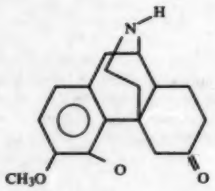
19



22

or

(m) alternately, converting compound 18 into compound 21, nordihydrocodeinone



21

by bromination in acetic acid followed by treating with an aqueous base to close the oxide bridge, and hydrogenating the unisolated intermediate with palladium on carbon catalyst in 2-normal (2 N) acetic acid containing sodium acetate.

4,368,327

PROCESS FOR THE PREPARATION OF 3-(N-ARYLAMINO)-TETRA-HYDROTHIOPHEN-2-ONE DERIVATIVES

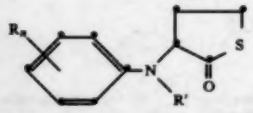
Walter Kunz, Oberwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 176,821, Aug. 8, 1980, abandoned. This application Jun. 30, 1981, Ser. No. 279,124

Int. Cl.³ C07D *233/00, 333/16*

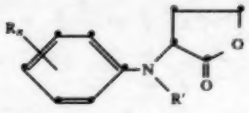
U.S. Cl. 548—262 **11 Claims**

1. A process for the preparation of a 3-(N-arylamino)-tetrahydrothiophen-2-one derivative of the general formula A:



(A)

in which the heterocyclic five-membered ring is unsubstituted or monosubstituted or polysubstituted by C_1–C_4-alkyl, n is an integer from 0 to 5, R signifies a number, of identical or different substituents other than hydrogen, selected from C_1–C_{12}-alkyl, C_1–C_{12}-alkoxy, halogen, nitro, and —CH_2—X—R″, and whereby two substituents R which are adjacent to one another may also form together with the phenyl ring a naphthyl group, and X is oxygen or sulfur and R″ is unsubstituted, monosubstituted or polysubstituted C_1–C_{12}-alkyl, unsubstituted, monosubstituted or polysubstituted phenyl or unsubstituted, monosubstituted or polysubstituted benzyl and in the three cases mentioned the possible substituents independently of one another are selected from the series lower alkyl, lower alkoxy, halogen or nitro, and R′ is hydrogen or the group —CO—R‴, in which R‴ is a non-halogenated aliphatic, heterocyclicaliphatic or heterocyclic radical or in which R″ is an aromatic or araliphatic radical which is unsubstituted or substituted in the aromatic moiety by halogen and in which the heterocyclic structure in each case contains one or more N, O and/or S atoms and an aliphatic chain can be interrupted one or more times by oxygen, sulfur, or nitrogen, and comprises reacting a compound of the formula B:



(B)

in which the possible substituents are as defined under formula A, at temperatures of +15° to +200° C. in an organic solvent with a salt of a thiocarboxylic acid.

4,368,328

PROCESS FOR PREPARING ALKYLTHIOBENZIMIDAZOLES

Sandor Szoke, Budapest; Gyorgy Lugosi, Felso-God; Maria Bakonyi, Budapest; Jeno Ghyczy, Budapest, and Gyorgy Csermely, Budapest, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

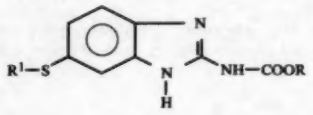
Filed Dec. 3, 1980, Ser. No. 212,628

Claims priority, application Hungary, Apr. 12, 1979, CI 1993

Int. Cl.³ C07D *235/04, 233/66*

U.S. Cl. 548—306 **6 Claims**

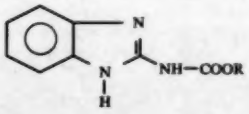
1. A process for the preparation of a compound of the formula (V)



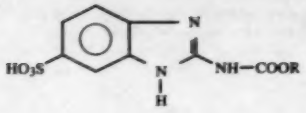
wherein

R and R^1 are each independently C_1 to C_3 alkyl, which comprises the steps of:

(a) sulfonating a compound of the formula (I)

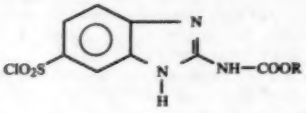


with oleum at 30° to 60° C. to form a compound of the formula (II)

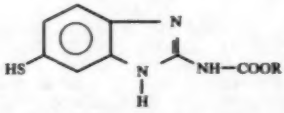


(b) converting the compound of the formula (II) into the sodium salt thereof with aqueous sodium hydroxide;

(c) chlorinating the sodium salt of the formula (II) with a chlorinating agent selected from the group consisting of phosphorus oxychloride, phosphorus pentachloride, and pyrocatechyl phosphorus trichloride to form a compound of the formula (III)



(d) reducing the compound of the formula (III) at a temperature between 0° and 100° C. with a metal or metal salt in an aqueous acidic medium to form a compound of the formula (IV)

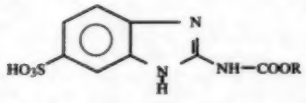


and, (e) alkylating the compound of the formula (IV) with an alkyl halide of the formula (VI)

R^1—Hal

wherein Hal is halogen at room temperature to yield the desired product.

4. A compound of the formula (II)



(II)

wherein R stands for an alkyl group having 1 to 3 carbon atoms, and salts thereof.

4,368,329

PROCESS OF PREPARING THIOPYRYLIUM SENSITIZING DYES

Alan R. Katritzky, Gainesville, Fla.; Basil J. Graphakos, Athens, Greece; Girard A. F. Lhommet, Paris, France, and Kenneth Reynolds, Harlow, England, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

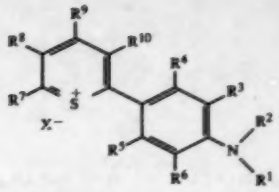
PCT No. PCT/US81/00266, § 371 Date Sep. 14, 1981, § 102(e) Date Sep. 14, 1981

PCT Filed Feb. 27, 1981, Ser. No. 310,906

Int. Cl.³ C07D *335/02*

U.S. Cl. 549—13 **8 Claims**

1. A method of preparing a compound of the general formula:



in which:

R^1 and R^2 independently represent a hydrogen atom, an alkyl or substituted alkyl group, an aryl or substituted aryl group, an aralkyl or substituted aralkyl group, a cycloaliphatic or substituted cycloaliphatic group or a heterocyclic or substituted heterocyclic group providing R^1 and R^2 do not both represent cyclic groups of aromatic nature, or R^1 and R^2 together may represent the necessary atoms to complete a non-aromatic heterocyclic ring,

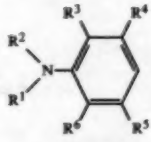
R^3, R^4, R^5 and R^6 independently represent a hydrogen atom or any substituent providing the sum of their σ_p constants has a value of less than ±0.5, or R^3 and R^4 and/or R^5 and R^6 may represent the necessary atoms to complete an alicyclic or aromatic ring, R^3 and R^2 and/or R^1 and R^6 may represent the necessary atoms to complete a non-aromatic heterocyclic ring,

R^7 and R^9 independently represent a hydrogen atom or any carbon linked substituent containing up to 16 carbon atoms,

R^8 and R^{10} independently represent a hydrogen atom, an alkyl group having 1 to 4 carbon atoms or any two adjacent substituents R^7, R^8, R^9 and R^{10} together may complete an alicyclic or aromatic ring, and

X^- represents an anion,

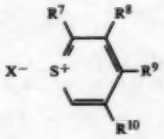
comprising reacting an amine of the general formula:



(II)

in which R^1 to R^6 are as defined above,

with a thiopyrylium salt of the general formula:



(III)

in which X^- and R^7 and R^{10} are as defined above, to yield the desired compound.

4,368,330

DERIVATIVES OF L-ASCORBIC ACID AND D-ERYTHORBIC ACID

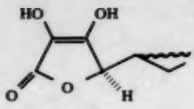
Glenn C. Andrews, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Apr. 30, 1981, Ser. No. 259,206

Int. Cl.³ C07D *407/04*

U.S. Cl. 549—315 **4 Claims**

1. A salt of a compound of the formula



4,368,331

3,4-DIHALO-TETRAHYDROPHYRAN-5-ONE USEFUL AS INTERMEDIATES FOR THE PREPARATION OF GAMMA-PYRONES

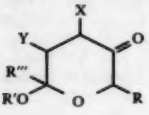
Thomas M. Brennan, Old Lyme; Daniel P. Brannegan, East Lyme; Donald E. Kuhla, and Paul D. Weeks, both of Gales Ferry, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 971,897, Dec. 21, 1978, abandoned, which is a division of Ser. No. 869,493, Jan. 16, 1978, Pat. No. 4,147,705, which is a division of Ser. No. 721,885, Sep. 9, 1976, Pat. No. 4,082,717, which is a continuation-in-part of Ser. No. 710,901, Aug. 2, 1976, abandoned. This application Nov. 13, 1979, Ser. No. 93,629

Int. Cl.[3] C07D 309/22

U.S. Cl. 549—417 6 Claims

1. A compound of the formula



wherein

R is hydrogen, (C_1–C_4) alkyl, phenyl or benzyl;

R′ is hydrogen, (C_1–C_4) alkyl, or

wherein R″ is methyl, ethyl or phenyl;

R‴ is hydrogen or (C_1–C_4) alkyl;

and X and Y are each chlorine or bromine.

4,368,332

PROSTAGLANDINS

Robert L. Jones, and Norman H. Wilson, both of Edinburgh, Scotland, assignors to National Research Development Corporation, London, England

PCT No. PCT/GB80/00001, § 371 Date Sep. 3, 1980, § 102(e) Date Sep. 3, 1980, PCT Pub. No. WO80/01381, PCT Pub. Date Jul. 10, 1980

PCT Filed Jan. 4, 1980, Ser. No. 205,964

Claims priority, application United Kingdom, Jan. 5, 1979, 7900368

Int. Cl.[3] G07C 53/136, 57/26

U.S. Cl. 560—120 18 Claims

1. A compound which is a bicyclo(2,2,1)heptane substituted at the 5-position by a group of the formula —R^1—COQ, where R^1 is selected from the group consisting of C_4–C_8 alkyl;

—CH_2—CH=CH—$(CH_2)_m$—, where m is an integer from 1 to 5;

—CH_2—CH_2—CH=CH—$(CH_2)_n$—, where n is an integer from 0 to 4;

—X—$(CH_2)_p$—, where p is an integer from 3 to 7;

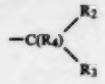
—CH_2—X—$(CH_2)_q$—, where q is an integer from 2 to 6;

—CH_2—CH_2—X—$(CH_2)_m$—; and

—CH=CH—$(CH_2)_3$—; wherein X is —O— or —S—;

COQ is carboxy, a physiologically acceptable carboxylate salt, a branched or unbranched C_1–C_5 alkyl ester or $CONHSO_2CH_3$;

and wherein said bicyclo(2,2,1)heptane is substituted at the 6-position by a grouping of the formula:



in which R_4 is selected from the group consisting of unsubstituted C_1–C_{10} branched or unbranched aliphatic hydrocarbon residues and C_1–C_{10} branched or unbranched aliphatic hydrocarbon residues substituted by Ar, —OAr, or SAr, wherein Ar is a phenyl or pyridyl residue which is unsubstituted or substituted by one or more substituents selected from the group consisting of halogen, halogen substituted C_1–C_5 branched or unbranched alkyl groups, sulphonamido groups, amino groups, hydroxy and C_1–C_{10} alkoxy groups;.

R_2 represents hydrogen and R_3 represents a hydroxy group, or R_2 and R_3 together represent the oxygen atom of a carbonyl group.

4,368,333

METHOD FOR THE CHEMICAL UTILIZATION OF COAL BY LIQUID PHASE OXIDATION

Laszlo Kovacs; Galina Moger nee Eremineva; Dezso Gal; Peter Hajdu; Julia Lukacs; Erik Kroo; Istvan Nemes; Andras Nemeth, all of Budapest; Katalin Szabo nee Mogyorosi; Geza Szentgyörgyi, both of Tatabanya; Szilard Riederauer, Budapest, and Janos Szepvölgyi, Tatabanya, all of Hungary, assignors to Tatabanyai Szenbanyak, Tatabanya, Hungary

Filed Jul. 31, 1981, Ser. No. 288,761

Int. Cl.[3] C07C 51/16

U.S. Cl. 562—407 5 Claims

1. A method for the liquid phase oxidation of coal performed with oxygen, wherein the oxidation is performed solely in the presence of a non-aqueous cooxidation partner selected from the group of liquid hydrocarbons and oxygen-containing liquid hydrocarbons.

4,368,334

P-HYDROXYMANDELIC ACID

John R. M. Dales, Littlehampton, England, assignor to Beecham Group Limited, England

PCT No. PCT/GB80/00126, § 371 Date Apr. 9, 1981, § 102(e) Date Jan. 23, 1981, PCT Pub. No. W081/00404, PCT Pub. Date Feb. 19, 1981

PCT Filed Aug. 8, 1980, Ser. No. 233,606

Claims priority, application United Kingdom, Aug. 9, 1979, 7927829

Int. Cl.[3] C07C 59/50

U.S. Cl. 562—470 10 Claims

1. A process for the isolation of a solid salt of p-hydroxymandelic acid, which process comprises reacting phenol with glyoxylic acid in the presence of sodium or potassium hydroxide, acidifying to a pH less than 3, extracting the resulting solution with a water-immiscible solvent to provide a solution of p-hydroxymandelic acid and precipitating the salt therefrom.

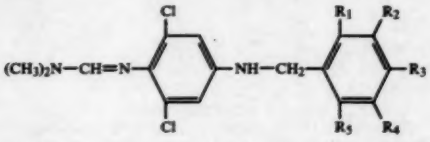
4,368,335

N'-(2,6-DICHLORO-4-(SUBSTITUTED-BENZYLAMINO)-PHENYL)-N,N-DIMETHYL-FORMAMIDINES

Walter E. Meyer, Suffern, N.Y.; Andrew S. Tomcufcik, Old Tappan, N.J., and Joseph W. Marsico, Jr., Pearl River, N.Y., assignors to American Cyanamid Company, Stanford, Conn.

Filed Nov. 25, 1981, Ser. No. 325,070
Int. Cl.³ C07C 123/00; C07D 317/64
U.S. Cl. 564—245 9 Claims

1. A compound selected from the group consisting of those of the formula:



wherein R_1 and R_2 are the same or different and are hydrogen, fluoro, chloro, bromo, methyl, methoxy or trifluoromethyl; R_4 and R_5 are the same or different and are hydrogen, chloro or methoxy; R_3 is hydrogen, methoxy, phenyl, dimethylamino or diethylamino; and R_2 and R_3 taken together is methylenedioxy with the proviso that at least two of R_1, R_2, R_3, R_4 and R_5 are hydrogen; and the pharmacologically acceptable acid-addition salts thereof.

4,368,336

PROCESS FOR FORMYLATING XYLENE MIXTURE

Susumu Fujiyama; Shunichi Matsumoto, and Yuji Takamizawa, all of Kurashiki, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Feb. 11, 1981, Ser. No. 233,304
Claims priority, application Japan, Feb. 14, 1980, 55/16785
Int. Cl.³ C07C 45/49
U.S. Cl. 568—428 3 Claims

1. A process for formylating a xylene mixture containing at least m-xylene, o-xylene, and ethylbenzene by carbon monoxide in the presence of hydrogen fluoride and boron trifluoride as a catalyst wherein the hydrogen fluoride is used at a molar ratio of 3–8 to the boron trifluoride, which comprises conducting formylation at a molar ratio of boron trifluoride to the sum total of m-xylene and o-xylene in the xylene mixture of not more than 1.5, thereby selectively and correspondingly producing at least 2,4-dimethylbenzaldehyde and 3,4-dimethylbenzaldehyde.

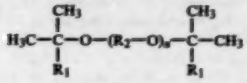
4,368,337

PROCESS FOR CONVERTING GLYCOL DIALKYL ETHER

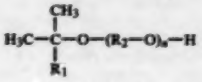
Kinya Tawara; Hiroki Kamiyama, both of Soka; Shigenori Nakashizu, Satte; Takashi Kaneko, Soka; Tadahiro Wakui, Soka, and Tadashi Matsumoto, Soka, all of Japan, assignors to Maruzen Oil Co., Ltd., Osaka, Japan

Filed Mar. 30, 1981, Ser. No. 248,913
Claims priority, application Japan, Mar. 28, 1980, 55/40645
Int. Cl.³ C07C 41/01
U.S. Cl. 568—613 13 Claims

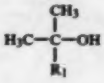
1. A process for converting glycol dialkyl ether without substantial formation of olefin oligomers by reaction with water, comprising reacting a feed glycol di-tertiary alkyl ether represented by structural formula (A) with water using a strongly acidic cation-exchange resin as a catalyst and a reaction temperature of from 40° C. to 150° C. under a pressure of from 1 to 70 kg/cm² (absolute pressure) in a molar ratio of water/feed glycol di-tertiary alkyl ether represented by the structural formula (A) of from 0.05/1 to 60/1, to convert the ether of formula (A) into (1) glycol mono-tertiary alkyl ether represented by the structural formula (B) and tertiary alcohol represented by the structural formula (C) or (2) glycol mono-tertiary alkyl ether represented by the structural formula (B), tertiary alcohol represented by the structural formula (C) and tertiary olefin represented by the structural formula (D); wherein (A), (B), (C), and (D) are as follows:



(A)



(B)



(C)

(D)

wherein R_1 represents a methyl group, and ethyl group, or a propyl group, n represents an integer of from 1 to 10, and R_2 represents an alkylene group having from 2 to 14 carbon atoms, and the total number of carbon atoms in the group $-(R_2-O)_n$ is from 2 to 30.

4,368,338

DEGREASER SOLVENT STABILIZATION

Nobuyuki Ishibe, and Jimmie K. Harden nee Ashley, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 18, 1981, Ser. No. 274,893
Int. Cl.³ C07C 21/10, 21/12
U.S. Cl. 570—109 6 Claims

1. A stabilized chlorinated solvent composition consisting essentially of perchloroethylene or trichloroethylene and a stabilizer combination of from about 0.01 to about 0.5% N-methyl pyrrole together with from about 0.1 to about 1% of ethyl acetate, acetonitrile or pyrazine, based on the total weight of solvent and stabilizer combination.

4,368,339

PROCESS FOR THE ISOMERIZATION OF A HALOGENATED TOLUENE

Kuniyuki Tada, Kamakura; Eiichi Minomiya, Odawara, and Takehisa Inoue, Tokyo, all of Japan, assignors to Toray Industries, Incorporated, Japan

Filed Aug. 5, 1981, Ser. No. 290,238
Claims priority, application Japan, Aug. 25, 1980, 55-115898
Int. Cl.³ C07C 17/24
U.S. Cl. 570—202 8 Claims

1. A process for the isomerization of a halogenated toluene characterized by contacting the halogenated toluene with an acid form of zeolite.

4,368,340
PROCESS FOR PRODUCING 1,3,5-TRICHLOROBENZENE

Ryuzo Nishiyama, Takatsuki; Kanichi Fujikawa, Moriyama; Isao Yokomichi, Moriyama; Itaru Shigehara, Moriyama, and Mikio Miyaji, Shiga, all of Japan, assignors to Ishihara Sangyo Kaisha Ltd., Osaka, Japan

Filed Dec. 4, 1980, Ser. No. 213,013

Claims priority, application Japan, Dec. 25, 1979, 54-168575

Int. Cl.³ C07C *17/12*

U.S. Cl. 570—207 **6 Claims**

1. In a process for producing 1,3,5-trichlorobenzene by chlorinating 1,3,5-trihalobenzene having 1 to 3 bromine atoms and 2 to 0 chlorine atoms, an improvement characterized in that gaseous 1,3,5-halobenzene having 1 to 3 bromine atom and 2 to 0 chlorine atom is brought into contact with chlorine gas at a molar ratio of 0.5 to 3.0 of the stoichiometric amount of chlorine required for said conversion, in a vapor phase at a temperature of 280° to 500° C.

4,368,341
NOVEL COMPOUNDS AND THEIR USE IN ELASTOMER-CONTAINING COMPOSITIONS

Thomas C. Mathis, St. Louis, Mo., and Albert W. Morgan, Collinsville, Ill., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 187,232, Sep. 15, 1980, abandoned. This application Aug. 10, 1981, Ser. No. 290,621

Int. Cl.³ C07C *15/12*

U.S. Cl. 585—25 **9 Claims**

1. A compound consisting of at least 5 hydrocarbon rings including at least one aromatic ring and at least one saturated ring free to rotate independently of at least one aromatic ring in the molecule of said compound, at least one divalent aliphatic radical linking two of said rings, and from zero to about two alkyl substituents on said rings, said compound having a molecular weight between about 400 and about 8000.

4,368,342
BENZENE ALKYLATION PROCESS

Lynn H. Slaugh, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 219,279, Dec. 22, 1980, Pat. No. 4,335,022, which is a continuation-in-part of Ser. No. 61,205, Jul. 27, 1979, abandoned. This application Mar. 5, 1982, Ser. No. 355,013

Int. Cl.³ C07C *2/64*

U.S. Cl. 585—446 **11 Claims**

1. A process for the alkylation of benzene with an alkene which comprises contacting benzene and the alkene at about −20° to about 350° C. with a catalyst prepared by a process which comprises impregnating a substantially dehydrated amorphorous silica gel with aluminum hydride dissolved in an anhydrous, non-hydroxyl containing organic solvent, drying the impregnated silica to remove the solvent and subsequently heating the impregnated silica at a temperature of about 300° to about 900° C. in a non-oxidizing atmosphere.

4,368,343
PROCESS FOR PRODUCING HIGH-VACUUM OILS

Izrail L. Kotlyarevsky, ulitsa Zhemchuzhnaya, 10, kv. 3; Ninel I. Myakina, ulitsa Tereshkovoi, 8, kv. 25; Mikhail A. Kamkha, ulitsa Lenina, 18, kv. 67; Ivan M. Ikryanov, ulitsa Rossiiskaya, 17, kv. 87, and Svetlana A. Glyadinskaya, ulitsa Shljuzovaya, 12, kv. 48, all of Novosibirsk, U.S.S.R.

Filed Sep. 18, 1980, Ser. No. 188,546

Int. Cl.³ C07C *2/66, 2/70*

U.S. Cl. 585—456 **5 Claims**

1. A process for producing high-vaccum oils comprising alkylation of condensed and non-condensed aromatic hydrocarbons with compounds selected from the group consisting of normal secondary alkylchlorides containing 8 to 12 carbon atoms, and mixtures of said chlorides; said alkylchlorides having an iodine number of not more than 1, and being taken in a molar ratio to said condensed and non-condensed aromatic hydrocarbons ranging from 2.5:1 to 5:1; conducting the alkylation reaction at a temperature within the range of from 20° to 100° C. in the presence of 2 to 15 mol.% of aluminum chloride based on the amount of the alkylchlorides employed until the evolution of hydrogen chloride ceases, separating the catalyst from the alkylate produced in the reaction, distilling said alkylate under vacuum, collecting the desired fraction with a boiling range of from 220° to 250° C./0.3 mm Hg and recycling the remaining fractions to the alkylation stage.

4,368,344
OXIDATIVE DEHYDROGENATION OF ORGANIC COMPOUNDS WITH A ZINC TITANATE CATALYST

John H. Kolts, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 26, 1981, Ser. No. 267,230

Int. Cl.³ C07C *5/36, 11/12*

U.S. Cl. 585—624 **13 Claims**

1. A process for the catalytic oxidative dehydrogenation of at least one dehydrogenatable organic compound which has at least one

grouping comprising the step of contacting a mixture of free oxygen and said at least one dehydrogenatable organic compound, under suitable oxidative dehydrogenation conditions, with a catalyst composition comprising zinc and titanium wherein said zinc and said titanium are present in said catalyst composition in the form of zinc titanate which is prepared by calcining a mixture of zinc oxide and titanium dioxide in the presence of free oxygen at a temperature in the range of about 650° to about 1050° C.

4,368,345
CATALYST FOR DISPROPORTIONATION OF OLEFINS

Kathleen F. Dickinson, Edinburgh, Scotland, assignor to BP Chemicals Limited, London, England

Filed Dec. 22, 1981, Ser. No. 333,489

Claims priority, application United Kingdom, Jan. 7, 1981, 8100348

Int. Cl.³ C07C *6/00*

U.S. Cl. 585—643 **10 Claims**

1. A process for the disproportionation of n-olefins comprising contacting the olefin feed with a catalyst composition comprising molybdenum oxide or tungsten oxide supported on silica characterised in that the catalyst composition is produced by impregnating a silica support with a solution made from a halide of a metal selected from molybdenum and tungsten, removing the solvent by evaporation, and heat treating the impregnated support at an elevated temperature such that (a) the metal is converted to the corresponding oxide and/or an oxy-salt and (b) the halogen content thereof is reduced to less than 0.1% by weight of the total composition.

2. A process according to claim 1 wherein the metal halide used as the source of tungsten is a hexa-halide of tungsten and the source of molybdenum is a molybdenum penta-halide.

4,368,346

OXIDATIVE DEHYDROGENATION OF PARAFFINS WITH A PROMOTED COBALT CATALYST

Alan D. Eastman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 181,515, Aug. 26, 1980, abandoned. This application May 1, 1981, Ser. No. 259,738

Int. Cl.³ C07C 5/327

U.S. Cl. 585—658 22 Claims

1. A process for the catalytic oxidative dehydrogenation of a paraffin having from 2 to 5 carbon atoms comprising the step of contacting said paraffin under suitable oxidative dehydrogenation conditions with a catalyst composition comprising cobalt; phosphorus; at least one promoter selected from the group consisting of zinc, titanium, zirconium, niobium, indium, lead and bismuth; at least one alkali metal; at least one halogen selected from the group consisting of chlorine, bromine and iodine; and oxygen; wherein the concentration of said at least one alkali metal is in the range of about 1 to about 10 weight percent calculated as the oxide and based on the weight of said catalyst composition.

4,368,347

PROCESS FOR THE SEPARATION OF METAXYLENE FROM MIXTURES OF AROMATIC HYDROCARBONS

Sergio Carra; Elio Santacesaria; Massimo Morbidelli; Franco Codignola, and Lucio DiFiore, all of Milan, Italy, assignors to Sisas S.p.A., Milan, Italy

Filed Dec. 8, 1980, Ser. No. 214,286

Claims priority, application Italy, Aug. 7, 1980, 24044 A/80

Int. Cl.³ C07C 7/12, 7/14

U.S. Cl. 585—828 11 Claims

1. A process for separating metaxylene from a mixture of aromatic C_8 hydrocarbons consisting of ortho-, meta and paraxylene and ethylbenzene, said process comprising

(1) initially saturating a zeolite Y adsorption bed with vapors of a desorbent, then,

(2) passing said mixture in the vapor phase through a potassium-exchanged adsorption bed of said zeolite Y at a spacial velocity of between 30 and 600 h^{-1} and at a pressure between atmospheric and 2 atmospheres to displace said desorbent, the adsorption bed being maintained at a temperature of between about 145° C. and 250° C., thereby saturating the adsorption bed with the mixture of aromatic C_8 hydrocarbons,

(3) collecting and removing from the saturated adsorption bed, in a desorption phase, (i) a first fraction of metaxylene plus desorbent, and (ii) a second fraction of a mixture of metaxylene, desorbent and an aromatic C_8 hydrocarbon isomer present in the starting mixture and having an affinity for the adsorbent bed second only to the affinity of that of metaxylene, and

(4) recycling the first fraction (i) of metaxylene plus desorbent collected in step (3) to the adsorption bed in step (2).

ELECTRICAL

4,368,348
VACUUM CLEANER HOSE WITH AN ELECTRICAL CONDUCTOR

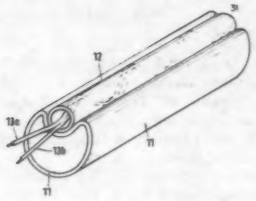
Leo Eichelberger, Rüsselsheim, and Georg Endres, Frankfurt-Nied, both of Fed. Rep. of Germany, assignors to Techno-Chemie Kessler & Co. GmbH, Frankfurt, Fed. Rep. of Germany

Filed Dec. 8, 1980, Ser. No. 213,883

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951630; Nov. 24, 1980, 3044068

Int. Cl.³ F16L *11/12*; A47L *9/24*

U.S. Cl. 174—47 **9 Claims**



1. A vacuum cleaner hose, comprising a first flexible hose (**11**) having a given large diameter for forming a first, dust conveying conduit, a portion of the wall of said first flexible hose being radially inwardly indented and forming a single relatively narrow outwardly open channel (**12**) extending along the length of said flexible hose (**11**), a second flexible hose (**31**) located in said narrow channel (**12**) and connected to the outer surface of the wall of said first flexible hose (**11**), said second flexible hose (**31**) having a diameter smaller than said given large diameter of the first flexible hose for providing a second conduit, and electrical conductor means (**13***a*, **13***b*) extending through said second conduit, said electrical conductor means being separated from said first dust conveying conduit.

4,368,349
FLASHER CONTROLLER FOR VEHICLE LIGHTS

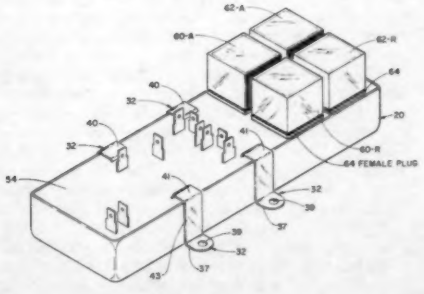
Robert P. Donley, 2500 Lane Rd., and Terry Dawson, 1367 Crestview, both of Columbus, Ohio 43221

Filed May 11, 1981, Ser. No. 262,200

The portion of the term of this patent subsequent to May 19, 1998, has been disclaimed.

Int. Cl.³ H05K *5/00*

U.S. Cl. 174—52 PE **6 Claims**



1. A controller for sequentially operating a plurality of vehicle lights comprising, in combination a circuit board housing including spaced sidewalls and a bottom wall forming a cavity; a circuit board positioned in the cavity and including a circuit board ground terminal; an electrically conductive mounting and grounding means including an internal flange forming a second ground terminal engaging said circuit board ground terminal, an intermediate flange extending to the exterior of said cavity, and an external flange extending beyond a side wall and forming a housing supporting mount for connection with a vehicle in grounded relationship therewith; a plurality of upstanding conductors, each of which includes a lower end mounted on the circuit board and an upper end connector for attachment to external circuit elements, said conductors comprising the following:

1. battery conductor,
2. amber light conductors
3. red light conductors
4. start switch conductor,
5. door switch conductor,

and a resinous insulating and sealing material within said cavity in sealed surrounding relationship with said engaging ground terminals and said lower ends of said upstanding conductors.

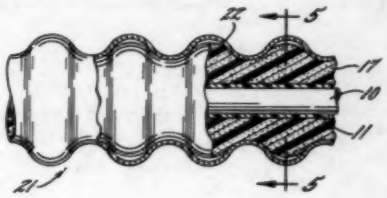
4,368,350
CORRUGATED COAXIAL CABLE

Robert D. Perelman, Hazel Crest, Ill., assignor to Andrew Corporation, Orland Park, Ill.

Division of Ser. No. 125,859, Feb. 29, 1980, Pat. No. 4,304,713. This application May 28, 1981, Ser. No. 267,901

Int. Cl.³ H01B *11/18*

U.S. Cl. 174—102 D **7 Claims**



1. A coaxial cable comprising, in combination, an inner conductor, a generally tubular outer conductor coaxially surrounding said inner conductor in spaced relation thereto, and a continuous unitary layer of a foamed fluorinated ethylene-propylene polymer dielectric containing a polytetrafluoroethylene nucleating agent bonded to said inner conductor along the entire length and around the entire circumference of said inner conductor in the space between said inner and outer conductors and engaging at least portions of the inner surface of said outer conductor so as to maintain a fixed spaced relationship between said inner and outer conductors, said foamed dielectric having closed cells with an average cell size on the order of from 10 to 40 mils., a density of less than about 1.0 g/cc., and an insulation loss of less than about 1.8 db/100 ft. at 1000 MHz.

4,368,351
AMPLITUDE MODULATED DIGITIZER

Scott E. Zimmer, Fairfield, Conn., assignor to Summagraphics Corporation, Fairfield, Conn.

Filed Feb. 12, 1981, Ser. No. 233,626

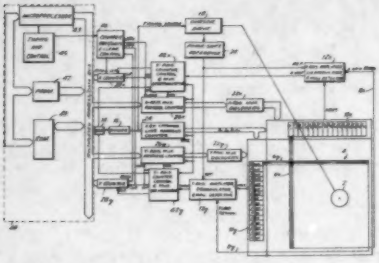
Int. Cl.³ G08C *21/00*

U.S. Cl. 178—19 **4 Claims**

1. In a digitizer having a pointer inductively coupled to a grid of a plurality of elements, means for energizing one of said grid and pointer with an alternating signal, means for sequentially enabling said elements, means for detecting a change in phase of the signal induced in the other of said pointer and grid in response to said alternating signal, and a counter responsive to said phase change detecting means for recording a count proportional to the time between the start of said sequential enabling of said elements and said phase change detection, the improvement wherein said detecting means comprises

an envelope detector having a first input operatively con-

nected to said other of said pointer and grid to receive said induced signal, a second input operatively connected to said energizing means to receive a reference signal having a frequency equal to the frequency of said alternating signal, means multiplying the signals at said two inputs to produce an output having a waveform with an envelope with one polarity when said alternating signal and induced



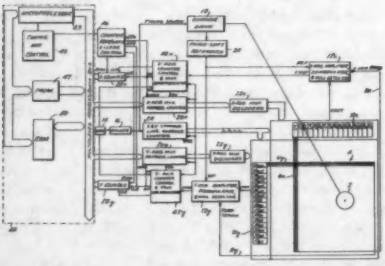
signal are in phase and an opposite polarity when said alternating and induced signals are out of phase, whereby said waveform changes polarities substantially at the time of change of phase of said induced signal, and a zero crossing detector for detecting the time at which the polarity of said waveform changes, to control the count in said counter.

4,368,352

DIGITIZER WITH FLOATING SCAN

Robert Davis, Prospect, Conn., assignor to Summagraphics Corporation, Fairfield, Conn.

Filed Feb. 12, 1981, Ser. No. 233,862
Int. Cl.³ H04N *1/00*; G08C *21/00*
U.S. Cl. 178—19 **13 Claims**



1. In a digitizer having a pointer inductively coupled to a grid of parallel conductors, means for energizing one of said grid and pointer with an alternating signal while scanning said grid, means for detecting a change in phase of the signal induced in the other of said pointer and grid during scanning of said grid in response to said alternating signal, and a counter responsive to said energizing means and said phase change detecting means for recording a count proportional to the time between commencement of said scanning and said phase change detection, the improvement which comprises

a plurality of grid conductor enabling devices including a first grid conductor enabling device associated with a first grid subsection including an origin conductor and a last grid conductor enabling device associated with a grid subsection displaced from the origin conductor, each enabling device being associated with a subsection of said grid including a plurality of conductors, said grid subsections overlapping to have a plurality of common conductors, each of said grid conductor enabling devices, when actuated, serially enabling each of the grid conductors within its respective subsection for a period of time,

means for causing said grid conductor enabling devices to be sequentially actuated for serially enabling the conductors in their respective grid subsections during an initial measurement cycle until said phase change is detected, and

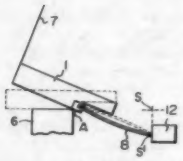
means responsive to said phase change detecting means during the serial enabling of conductors of any subsection for causing the following initial measurement cycle to commence with the serial enabling of conductors associated with the respective grid subsection and having a predetermined relationship to the conductor being enabled at the time of the detected phase change.

4,368,353

PRINTER HEAD FOR SERIAL DOT PRINTER

Hirokazu Ando; Yasuo Ohmori; Kazumasa Fukushima, all of Tokyo; Mitsuo Iwama, and Tsunematsu Takahashi, both of Yokosuka, all of Japan, assignors to OKI Electric Industry Co., Ltd. and Nippon Telegraph & Telephone Public Corporation, both of Tokyo, Japan

Filed Mar. 6, 1981, Ser. No. 241,054
Claims priority, application Japan, Mar. 12, 1980, 55-30231
Int. Cl.³ B41J *33/00, 3/12*
U.S. Cl. 178—30 **8 Claims**



1. A printer head for a serial dot matrix printer comprising:

(a) a cylindrical permanent ring magnet which is axially magnetized,

(b) a circular bottom plate covering the bottom of said permanent magnet,

(c) a plurality of electromagnets each having a center core and a coil wound around the core positioned in a circle on said bottom plate so as to be surrounded by said permanent ring magnet,

(d) a plurality of moving bodies equal in number to the number of said electromagnets, each moving body corresponding to one of said electromagnets and having at least an elongated armature overlying the core of said corresponding electromagnet, a leaf spring supporting said armature, and a print needle mounted substantially perpendicular to said elongated armature at an end thereof,

(e) a yoke means for providing a substantially closed magnetic path with said permanent magnet, said bottom plate, each of said electromagnets, and each of said armatures, and supporting each of said plate springs at one end thereof,

(f) each of said moving bodies being rotatably supported on one of the edges of the top of said corresponding core so that the armature rotates around a rotational center at said edge, and the rotating mass of the moving body is distributed on both sides of said center of rotation, with said leaf spring extending in the longitudinal direction of said elongated armature, the extreme end of said leaf spring being fixed to said yoke means at a point S' which is displaced from the extension S of the top of said core, wherein said armature is rotated about said edge on the top of said related core such that said armature is rotated towards said core in the absence of electric power to said coil thereby storing the stress in said spring, and said armature is released upon application of electric power to said coil

such that said armature is rotated away from said core by the stress stored in said spring to cause said print needle to strike a paper, and

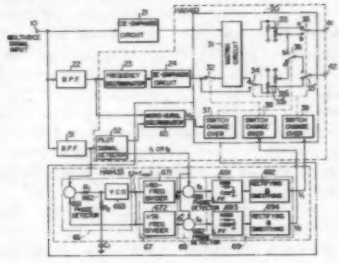
(g) a cover plate covering the printer head, said cover plate having a guide post at the center of the same for guiding said print needles so that the print needles are aligned on a straight line through the slit at the extreme end of the guide post.

4,368,354

DISCRIMINATOR APPARATUS FOR DETECTING THE PRESENCE OF A SIGNAL BY USING A DIFFERENTIAL BEAT SIGNAL HAVING AN INAUDIBLE FREQUENCY

Makoto Furihata, Tachikawa; Masanori Oguino, and Noboru Sakata, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 17, 1980, Ser. No. 112,815
Claims priority, application Japan, Jan. 19, 1979, 54-3959
Int. Cl.³ H04H 5/00; H04N 7/00
U.S. Cl. 179—1 GB **5 Claims**



5. A discriminator apparatus comprising:

a first and a second frequency mixer means each supplied with two input signals for producing a zero beat signal;

a first signal supply means for supplying a signal to be detected having a frequency (f_0) to said first and second frequency mixers as one of the input signals thereof;

a second signal supply means for supplying a reference signal having the same frequency as said frequency (f_0) but a phase difference of 90° to said first and second frequency mixer means as the other one of the input signals thereof, said second signal supply means comprising a P.L.L. circuit, including a voltage-controlled oscillator receiving a signal of a frequency (f_{01}) and causing oscillation, thereby to produce the oscillator output of a frequency (f_{VCO}), first converter circuit means connected to said P.L.L. circuit for converting the signal of said oscillator frequency (f_{VCO}) into a reference signal having the same frequency as that of the signal to be detected, and second converter circuit means connected to said P.L.L. Circuit for inverting the phase of said oscillator output signal and converting said oscillator output signal into a signal ($-f_{01}'$) of the same frequency as that of the signal to be detected;

a first circuit and a second circuit connected to said first and second mixer means for passing components of not more than about 5 Hz and rectifying said components, thereby to extract said components in the form of d.c. signals; and

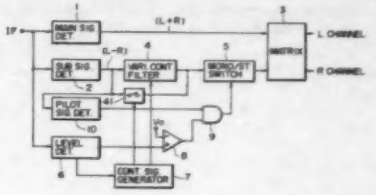
an adder connected to said first circuit and said second circuit for adding said d.c. signals therefrom, thereby to detect the presence of the signal (f_0) to be detected by the presence of an output from said adder.

4,368,355

AM STEREOPHONIC SIGNAL RECEIVER WITH ELECTRIC FIELD STRENGTH DETECTION

Toshihito Ichikawa, Kawagoe, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jan. 21, 1981, Ser. No. 227,119
Claims priority, application Japan, Jan. 28, 1980, 55-8646
Int. Cl.³ H04H 5/00
U.S. Cl. 179—1 GS **7 Claims**



1. An AM stereophonic signal receiver comprising: detecting means operating in response to a received AM stereophonic signal for producing a sum signal representative of the sum of first and second channel signals and a difference signal representative of the difference between said first and second channel signals;

electric field strength detecting means for producing a detection signal when an electric field strength of said received AM stereophonic signal is smaller than a first predetermined value;

a low-pass filter having an input coupled to receive said difference signal, said low-pass filter operating in response to said detection signal to reduce high frequency components in said difference signal; and

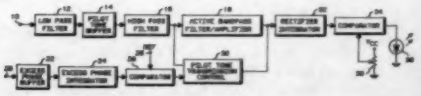
matrix circuit means operating in response to said sum signal and an output of said low-pass filter for producing said first and second channel signals.

4,368,356

PILOT TONE DETECTOR UTILIZING PHASE DEVIATION SIGNALS

Lawrence M. Ecklund, Wheaton, and Frank Droog, Jr., Chicago, both of Ill., assignors to Motorola Inc., Schaumburg, Ill.

Filed Mar. 20, 1981, Ser. No. 245,800
Int. Cl.³ H04H 5/00
U.S. Cl. 179—1 GS **6 Claims**



1. A pilot tone detector for detecting a predetermined frequency when present in a received AM stereophonic signal and comprising:

a first input means for providing an audio input signal which is proportional to the phase deviation ϕ of the received signal;

a second input means for providing a second input signal which is a function of the magnitude of the phase deviation of the received signal;

filter means coupled to the first input means for providing an output signal essentially limited to the predetermined received frequency;

first circuit means coupled to control the output of the filter means in response to a first control signal;

second circuit means coupled to receive the controlled output signal of the filter means for rectifying and inte-

grating said output signal and providing a second controlled output signal in response thereto;

a reference voltage source;

comparator means coupled to receive the second controlled signal and the reference voltage for providing a third controlled signal in response thereto;

an indicator means coupled to the comparator means for being controlled by the third controlled signal; and

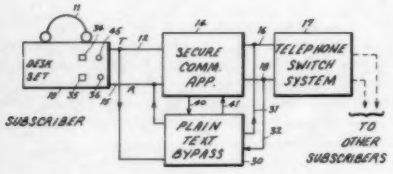
third circuit means coupled to the second input means for processing the second input signal for providing the first control signal to the first circuit means.

4,368,357

BYPASS APPARATUS FOR USE IN SECURE COMMUNICATION SYSTEMS

Richard J. Gurak, Summit, N.J., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 14, 1980, Ser. No. 206,782
Int. Cl.³ H04M 1/70
U.S. Cl. 179—1.5 R **10 Claims**



1. In a secure telecommunications system of the type adapted to receive clear text signals and to convert said clear text signals to a scrambled signal at an output indicative of a secure mode for applying said signal to a communications channel to thus provide secure communications between two system subscribers, the combination therewith of apparatus for providing a bypass to enable said clear text to be directly transmitted to said communications channel during a non-secure mode while assuring that said bypass circuit is inoperative during a secure transmission, comprising:

selectively activated gating means adapted to receive said clear text signals at an input and having an output;

means for selectively activating said gating means during a non-secure mode, and for deactivating said gating means during a secure mode,

means for applying a status signal to said gating means to provide at said output a composite signal of said clear text and said status signal, said composite signal having high frequency components and low frequency components;

first means coupled to said output for passing high frequency components indicative of said clear text and for applying said signals to said communications channel during said non-secure mode;

second means coupled to said output for responding to low frequency components to provide a low frequency signal, indicative of said status signal;

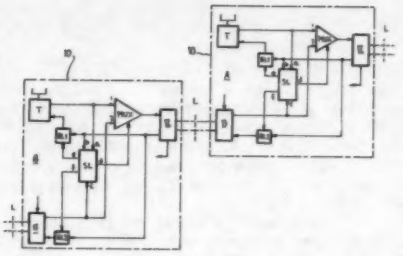
monitoring means responsive to said low frequency signal to provide an output when said gating means is activated to provide an indication of such activation, whereby a subscriber is notified during a secure mode when clear text is undesirably coupled to said transmission channel.

4,368,358

LOOP SHARING IN DIGITAL SYSTEMS

Ludwik Herschtal, North Balwyn, Australia, assignor to L. M. Ericsson Pty. Ltd., Broadmeadows, Australia

Filed Jul. 15, 1980, Ser. No. 169,209
Claims priority, application Australia, Jul. 25, 1979, PD9709
Int. Cl.³ H04Q 5/02
U.S. Cl. 179—17 B **9 Claims**



1. A telephone instrument for transmission and reception of digital data, said instrument being adapted for connection into a digital loop sharing telephone system to transmit digital data to and receive digital data from an exchange in the upstream direction through other telephone instruments connected to said loop in said upstream direction, said telephone instrument comprising:

code detector means for detecting a change to an "off-hook" or data sending state in said instrument and for detecting a change to an "off-hook" or data sending state in a similar telephone instrument downstream of said telephone instrument; and

logic circuitry connected to said code detector means, said logic circuitry being responsive to the change detected by said code detector means to latch said telephone instrument to enable data originating from said telephone instrument or data from a telephone instrument downstream thereof to be transmitted only in said upstream direction of said loop depending, respectively, upon whether said telephone instrument or said downstream telephone instrument first changes to an "off-hook" state, only one of said telephone instruments being able to communicate with said upstream exchange after an "off-hook" state is detected.

4,368,359

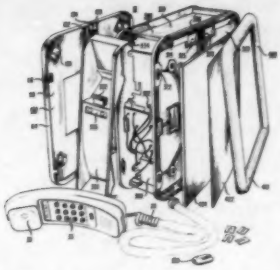
WALL TELEPHONE STAND

Donald M. Genaro, Haworth, N.J.; Richard G. Klier, Greenfield, Ind.; John N. McGarvey, Drexel Hill, Pa., and Warren R. Tolman, Greenfield, Ind., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 30,724, Apr. 17, 1979, abandoned. This application Dec. 9, 1980, Ser. No. 214,669
Int. Cl.³ H04M 1/04
U.S. Cl. 179—146 R **18 Claims**

1. A wall telephone stand comprising a rear surface adapted to be mounted on a vertical support, a front surface including a message display portion, a cradle adjacent to the message display portion for accommodating a telephone handset, and a storage compartment situated between the front surface and

the rear surface, the storage compartment being free of any electrical components and the storage compartment including



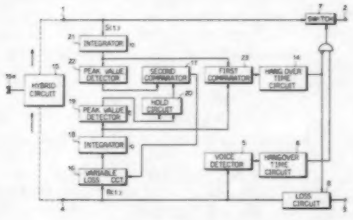
a tray that is displaceable out from the storage compartment to assist in removing an article from the storage compartment.

4,368,360

ADAPTIVE CONTROL TYPE ECHO SUPPRESSOR

Akira Sato; Masamichi Niiya, both of Tokyo; Masayuki Takeuchi, Hino; Masaru Fukai, Ichikawa, and Sotokichi Shintani, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

Continuation-in-part of Ser. No. 958,948, Nov. 8, 1978, abandoned. This application May 1, 1980, Ser. No. 145,492
Claims priority, application Japan, Nov. 8, 1977, 52-133107
Int. Cl.³ H04B *3/20*
U.S. Cl. 179—170.2 **2 Claims**



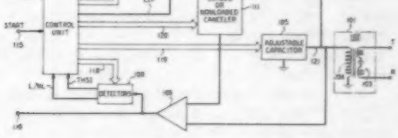
1. In an adaptive control echo suppressor of the type which includes a first comparator for comparing voice signal levels of sending and receiving paths with each other and which generates a signal to control cutting off the sending path to suppress an echo when the level of the voice signal of the receiving path is higher than the level of the voice signal of the sending path, the receiving path including a fixed loss when the first comparator does not generate the signal, and means responsive to the signal of the first comparator for cutting off the sending path and removing the fixed loss from the receiving path, the improvement comprising: a pair of integrator circuits connected for respectively integrating the voice signals of the sending and receiving paths to produce respective integrated voice signals defining the voice signal levels compared by said first comparator and for applying the integrated voice signals to said first comparator; a second comparator; a variable loss circuit controlled by the output of said second comparator independently of the output of the first comparator; means including said variable loss circuit defining a control signal path loop for applying the voice signal of the receiving path through said variable loss circuit and one of said integrator circuits to said second comparator for comparing the peak of the integrated voice signal of the receiving path with the peak of the integrated voice signal of the sending path to control said variable loss circuit to reduce the output of said second comparator to zero; wherein said pair of integrator circuits have predetermined time constants effective to prevent influence of sending and receiving path noise on the circuit operation; and means for applying an output of said one of said integrator circuits that receives the output of said variable loss circuit as the integrated voice signal of the receiving path applied to said first comparator.

4,368,361

AUTOMATICALLY ADJUSTABLE BIDIRECTIONAL-TO-UNIDIRECTIONAL TRANSMISSION NETWORK

Li-Jin W. Chung, Burlington, N.C.; Ernest P. Moore, Berkeley Heights, N.J.; Glendon R. Porter, Denville, N.J., and Joseph F. Rizzo, Lodi, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 28, 1980, Ser. No. 173,011
Int. Cl.³ H04B *3/20*
U.S. Cl. 179—170.2 **11 Claims**



1. A transmission network adapted to couple a unidirectional receive path and a unidirectional transmit path to a bidirectional path including a 2-wire cable comprising:

a canceler including means for generating a correction signal which is substantially a replica of an error signal developed in the network and included as a component of a transmit signal supplied to the transmit path, said correction signal generating means including a plurality of controllably adjustable impedance elements;

controllable signal generating means for supplying predetermined test signals to the receive path;

signal detection means for detecting signal amplitudes on the transmit path;

means for algebraically combining said correction signal with the transmit signal; and

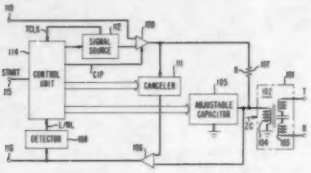
control means for generating control signals to controllably adjust said plurality of impedance elements in said correction signal generating means in a prescribed adjustment sequence, each of said impedance elements being adjusted in said sequence while supplying a corresponding one of said test signals to the receive path to obtain an amplitude null in the transmission path as detected by said detection means, said adjustment sequence including multiple iterative adjustment of predetermined ones of said impedance elements for automatically converging said correction signal generation means to have an optimum transfer function which substantially matches the impedance developed in the network when the bidirectional path is connected thereto so that said correction signal is substantially a replica of the error signal.

4,368,362

AUTOMATIC TELEPHONE LOADED/NONLOADED FACILITY TYPE IDENTIFICATION CIRCUIT

Li-Jin W. Chung, Burlington, N.C.; Ernest P. Moore, Berkeley Heights, N.J.; Glendon R. Porter, Denville, N.J., and Joseph F. Rizzo, Lodi, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 28, 1980, Ser. No. 173,020
Int. Cl.³ H04B 3/20
U.S. Cl. 179—170.2 5 Claims



1. In a transmission network of a type adapted to connect a receive unidirectional transmission path and a transmit unidirectional transmission path to a bidirectional transmission path, apparatus for determining whether the bidirectional transmission path includes either a loaded type 2-wire cable or a nonloaded type 2-wire cable, characterized by,

means for controllably generating and supplying a test signal having a predetermined frequency and amplitude to the receive unidirectional transmission path,

means for detecting the amplitude value of signals on the transmit unidirectional path, and

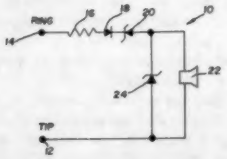
means for comparing said detected amplitude value with a predetermined threshold value, said comparing means generating a first output signal when said amplitude value is greater than said threshold identifying the bidirectional path as including 2-wire loaded type cable and a second output signal when said amplitude value is less than said threshold identifying the bidirectional path as including 2-wire nonloaded type cable.

4,368,363

AUDIBLE LINE TEST TERMINATION DEVICE

Omprakash G. Ahuja, East Meadow, N.Y., assignor to TII Industries Inc., Copiague, N.Y.

Filed May 11, 1981, Ser. No. 262,450
Int. Cl.³ H04M 1/26; G01R 19/14; H04B 3/46
U.S. Cl. 179—175.3 R 7 Claims



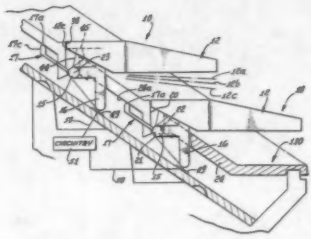
1. A line test termination device for providing a characteristic signature to the telephone central office and an audible signal at the subscriber termination when a continuity test is made on a subscriber line having a pair of electrically conductive paths, comprising; a series current path including a resistance means, a diode means, voltage breakover means and an audio indicator means connected in series, said diode means being poled opposite said voltage breakover means, said current path being connected across said electrically conducting paths.

4,368,364

KEY MECHANISM

H. C. Harbers, Jr., San Marino, Calif., assignor to Load Cells Inc., South El Monte, Calif.

Filed Dec. 3, 1980, Ser. No. 212,574
Int. Cl.³ H01H 3/00; G10C 3/12
U.S. Cl. 200—6 R 11 Claims



1. In a key device to be carried by housing structure,

(a) a hinge adapted to be supported by said housing structure,

(b) a key tab projecting relatively rearwardly relative to the hinge, and connected with the hinge,

(c) a pusher operatively connected with the hinge to extend downwardly in rearwardly spaced relation to the hinge, for movement toward and engagement with a circuit element,

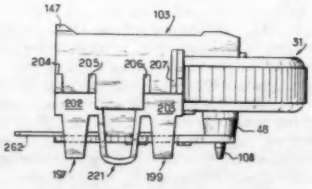
(d) a spring operatively connected with and projecting forwardly of the hinge below the key tab and confined by the housing structure to be deflected when the key tab is downwardly depressed about the hinge axis, to resist such depression.

4,368,365

SWITCHING DEVICE, NOTABLY FOR THE CONTROL OF AN ELECTRICAL MOTOR IN AN AUTOMOTIVE VEHICLE

Maurice A. Jacquet, Maurepas, France, assignor to Valeo, Paris, France

Filed Oct. 17, 1980, Ser. No. 197,818
Claims priority, application France, Oct. 18, 1979, 79 25949
Int. Cl.³ H01H 21/78
U.S. Cl. 200—11 TW 16 Claims



1. An electrical switching device comprising:

an actuating rotary knob formed as a hollow disc and having parallelly disposed first and second flanges and a knurled side edge interposed therebetween, said first flange having a circular collar projecting outwardly from a surface thereof and bordering an opening formed centrally in said first flange and a plurality of notches formed about the periphery thereof and provided by the intersections of convex circular arcs;

an electrically conductive slider contact attached to said rotary knob;

a cage having a bottom portion and walls perpendicularly

joined to the bottom portion; said cage bottom portion having a column extending perpendicularly from an inner surface thereof and on which said rotary knob is slidably and rotatably mounted, a circular rib protruding from the inner surface thereof which cooperates with said circular collar of said first flange, and a bridge extending from the inner surface of said cage bottom portion, said bridge including a protrusion and resilient end members joined to said protrusion at a first end of each and joined to said cage bottom portion at a second end of each thereby resiliently supporting said bridge above the inner surface of said cage bottom portion, said protrusion cooperating with said notches formed in the periphery of said first flange; and

a fixed plate to which is attached an electrical circuit which cooperates and is in contact with said slider contact, said fixed circuit plate being mounted on said column so that said rotary knob is interposed between said fixed circuit plate and said cage bottom portion, said fixed circuit plate being positioned in relation to said rotary knob to provide a determined contact pressure between said slider contact and said electrical circuit, said fixed circuit plate being immobilized in position by a snap-in engagement with said cage walls.

4,368,366

PNEUMATICALLY OPERATED DEVICE WITH VALVE AND SWITCH MECHANISMS

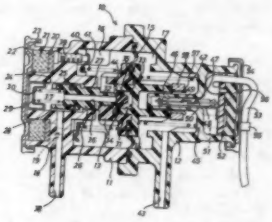
Kazuhiko Kitamura; Takao Nonoyama, and Atsuo Okumura, all of Toyota, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Toyota and Toyota Jidosha Kogyo Kabushiki Kaisha, Kariya, both of, Japan

Filed Jan. 7, 1981, Ser. No. 223,155

Claims priority, application Japan, Jan. 23, 1980, 55-6579

Int. Cl.³ H01H *35/34*

U.S. Cl. 200—83 Q **11 Claims**



1. A pneumatically operated device responsive to a signal pressure applied thereto from a source of pneumatic pressure for controlling the atmospheric air applied to a control device and for controlling an electric signal applied to an electric control circuit, said pneumatically operated device comprising:

a housing provided with a first inlet port for connection to said pneumatic pressure source, a second inlet port in open communication with the atmospheric air, and an outlet port for connection to said control device;

a diaphragm assembly assembled within said housing in a fluid tight manner to subdivide the interior of said housing into first and second chambers respectively in open communication with said first and second inlet ports, said diaphragm assembly being integrally provided with a movable member which is moved by the pressure difference between said first and second chambers;

valve means including a valve seat member adjustably threaded into said housing and a valve seat formed on an inner end portion of said valve seat member, said valve seat member having an air passage formed therein to permit the flow of atmospheric air from said second inlet port to said outlet port therethrough, and a valve member cooperating with said movable member to open and close said valve seat in response to the movement of said diaphragm assembly; and

switch means arranged within said housing to be connected to said control circuit and including a pair of contacts one of which is arranged to be operated in response to the movement of said diaphragm assembly.

4,368,367

GAS-BLAST SWITCH

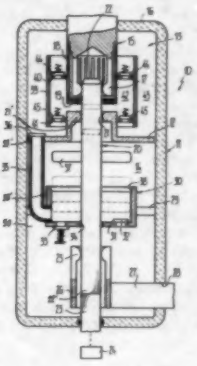
Adrian W. Roth, Aarau, and Hans-Rudolf Wüthrich, Oberentfelden, both of Switzerland, assignors to Sprecher & Schuh AG, Aarau, Switzerland

Filed Sep. 2, 1980, Ser. No. 183,428

Claims priority, application European Pat. Off., Mar. 10, 1980, 80101206

Int. Cl.³ H01H *33/88*

U.S. Cl. 200—148 A **9 Claims**



1. A gas-blast switch comprising:

means defining a gas-blast housing containing a switching chamber and an expansion chamber;

a stationary contact element;

a movable contact element;

means for placing said stationary contact element and said movable contact element into and out of engagement with one another within said switching chamber;

a blast nozzle cooperating with said movable contact element and closed by said movable contact element in a cut-on position of said gas-blast switch;

said switching chamber flow communicating by means of said blast nozzle with said expansion chamber;

a pump cylinder stationarily arranged within said expansion chamber;

said pump cylinder including a pressure side;

means including a check valve open in the direction of said switching chamber for connecting said switching chamber with said pressure side of said pump cylinder;

a movable pump piston operatively associated with said pump cylinder;

said movable pump piston pressurizing with a time-delay the pump cylinder during a cut-off stroke of the gas-blast switch;

said pump piston being rigidly connected with said movable contact element; and

the length of said pump cylinder being less than a switching stroke of said movable contact element, so that the pump piston is located externally of the pump cylinder at the region of a cut-off position of said gas-blast switch.

4,368,368

ELECTRICAL SWITCH WITH A VERTICAL PUSH-PIECE

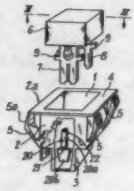
Victor Russenberger, 40 rue de la Source, 94130 Nogent-sur-Marne, France

Filed May 8, 1981, Ser. No. 261,980

Claims priority, application France, May 9, 1980, 80 10364

Int. Cl.³ H01H *13/56*

U.S. Cl. 200—153 J **3 Claims**



1. An electrical switch with vertical push-piece, comprising a main hollow body (1) in which can slide from top to bottom position and from bottom to top position a push-button (6) having a lower portion which supports two lugs (7, 8) maintaining blades (10) carrying mobile terminals (11) cooperating with studs (12) rigidly connected to squarepieces (13) fixed in a bottom portion of the main body (1), means for biasing said push-button in the top position, the lug (7) further carrying laterally a hollow heart-shaped cam (23) in which can circulate a dog (22) fixed at an upper portion of a rock-piece (20) pivotally mounted on a pin (21) rigidly connected to inner wall of the main body (1), thereby allowing opening and closing of at least one electrical circuit by the switch, each of the blades (10) carrying mobile terminals (11) being maintained in an inclined position on hooks (9) rigidly connected to the lugs (7, 8) of the push-button (6) by a spring (15) centered on a finger (16) rigidly connected below the push-button (6), the axis (21) of the rock-piece (20) being placed at center of gravity of said rock-piece, whereby the rock-piece (20) is functional regardless of its attitude.

4,368,369

ELECTRICAL SWITCH

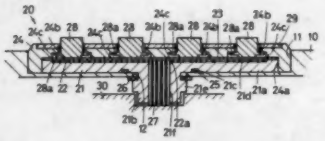
Masataka Matsumoto, and Kouichi Nakajima, both of Tanashi, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1981, Ser. No. 240,794

Claims priority, application Japan, Mar. 14, 1980, 55-32404; Mar. 25, 1980, 55-37847; Apr. 8, 1980, 55-45236; Apr. 15, 1980, 55-49793

Int. Cl.³ H01H *13/70, 1/02*

U.S. Cl. 200—264 **5 Claims**



1. An electrical switch comprising a base made of insulating material, a pressure conductive rubber sheet which is normally non-conductive and rendered conductive by compression thereof, said pressure conductive rubber sheet being disposed on said base, an upper sheet of insulating material adjacent said pressure conductive rubber sheet, printed conductive patterns on the lower surface of said upper sheet and in contact with said pressure conductive rubber sheet for forming a plurality of pairs of switch contacts, said conductive patterns comprising terminal portions connected to said switch contacts, said terminal portions being arranged adjacent each other in a central portion of said upper sheet, conductive connecting means provided in said base for connecting said terminal portions to an electric device positioned on an opposide side of said pressure conductive rubber sheet from said upper sheet, said conductive connecting means comprising a plurality of conductive connecting rubbers separated from each other by insulation means, said conductive rubbers being in abutting contact with respective terminal portions and with the electric device, means for applying pressure to said upper sheet for compressing said pressure conductive rubber sheet at portions corresponding to said plurality of pairs of switch contacts, and a cover secured to said base for receiving said upper sheet and said pressure conductive rubber sheet.

5. An electrical switch comprising a base made of insulating material, a pressure conductive rubber sheet which is normally non-conductive and rendered conductive by compression thereof, said pressure conductive rubber sheet being disposed on said base, an upper sheet of insulating material adjacent said pressure conductive rubber sheet, printed conductive patterns on the lower surface of said upper sheet and in contact with said pressure conductive rubber sheet for forming a plurality of switch contacts, printed conductive patterns and terminal portions on said base so as to provide a plurality of pairs of switch contacts on opposite sides of said pressure conductive rubber sheet, said conductive patterns comprising terminal portions connected to said switch contacts, said terminal portions being arranged adjacent each other in a central portion of said upper sheet, conductive connecting means provided in said base for connecting said terminal portions to an electric device positioned on an opposite side of said pressure conductive rubber sheet from said upper sheet, said conductive connecting means comprising a plurality of conductive connecting rubbers separated from each other by insulation means, said conductive rubbers being in abutting contact with respective terminal portions and with the electric device, means for applying pressure to said upper sheet for compressing said pressure conductive rubber sheet at portions corresponding to said plurality of pairs of switch contacts, and a cover secured to said base for receiving said upper sheet and said pressure conductive rubber sheet.

4,368,370

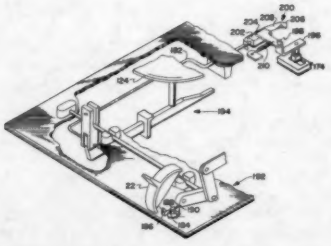
SWITCH ACTUATING APPARATUS FOR VIDEO DISC PLAYER

James D. Fletcher, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 12, 1981, Ser. No. 233,708

Int. Cl.³ H01H *3/20*

U.S. Cl. 200—329 **11 Claims**



1. Apparatus comprising:

(A) an actuated member adapted for motion between a first position and a second position;

(B) an actuating member subject to disposition at a retracted location, an intermediate location and an advanced location along a path; and

(C) a leaf spring having one end fixedly secured to said actuating member; said leaf spring further having a detent portion which is spaced from said actuated member when

said actuating member is occupying said retracted position thereof; said detent portion releasably capturing said actuated member as said actuating member is advanced to said intermediate location along said path; said capture of said actuated member by said detent portion of said leaf spring causing said actuated member to occupy said first position and said second position in response to disposition of said actuating member at said intermediate location and said advanced location respectively; said leaf spring allowing said actuated member to free from said detent portion as said actuating member is retracted away from said intermediate location; said leaf spring permitting travel of said actuating member between said retracted location and said intermediate location without affecting the position of said actuated member.

4,368,371

PROCESS FOR THE SUBMERGED-ARC WELDING OF LIGHT METALS SUCH AS ALUMINUM AND ALUMINUM ALLOYS

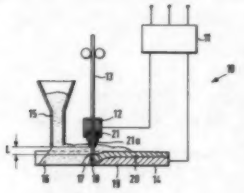
Ulrich Dilthey, Eching; Friedrich Eichhorn, Aachen, both of Fed. Rep. of Germany; Peter Hirsch, Farmington Hills, Mich.; Peter Holbach, Aachen, and Kurt Lettner, Unterschleissheim, both of Fed. Rep. of Germany, assignors to Messer Griesheim, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 8, 1980, Ser. No. 184,546

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1979, 2936364

Int. Cl.³ B23K *35/365, 9/18*

U.S. Cl. 219—73 **3 Claims**



1. In a process for the submerged arc welding of light metals, such as aluminum and aluminum alloys, especially of aluminum magnesium alloys, the improvement being a sodium-free flux consisting of 20 to 70 percent potassium chloride, 20 to 70 percent of one of calcium chloride and magnesium chloride, 1 to 20 percent of calcium fluoride, 1 to 15 percent of a substance selected from the group consisting of potassium carbonate, calcium carbonate and potassium oxide, and 1 to 20 percent of the low-density filler perlite.

4,368,372

APPARATUS FOR RESISTANCE SEAM WELDING

Gerd Habenicht, Garching, and Fritz Fischer, Neufahrn, both of Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

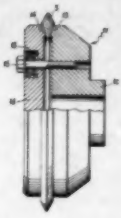
Filed May 13, 1980, Ser. No. 149,538

Claims priority, application Fed. Rep. of Germany, May 14, 1979, 2919365; Jan. 18, 1980, 3001832

Int. Cl.³ B23K *11/06*

U.S. Cl. 219—84 **21 Claims**

1. An electrode for electrical resistance seam welding apparatus, which electrode is arranged to be in welding engagement with a workpiece to be welded, said electrode comprising: a pressure member maintained out of contact with the workpiece, connected to a welding current supply, and made of a material which is a good electrical and thermal conductor; a contact member in the form of an endless element surrounding said pressure member and mounted to roll against the workpiece and to be pressed against the workpiece by said pressure member to be in welding engagement with the workpiece, said contact member being constituted by a rigid ring of a heat-resistant material selected to not form an alloy with the workpiece material, and being mounted to surround said pressure member; and means mounting said contact member to said pressure member for permitting relative radial movement therebetween caused by differences in thermal expansion between said contact and pressure members, wherein said means



mounting said contact member include clamping faces presented by said pressure member and between which said ring is clamped in said pressure member in a manner to have radial mobility sufficient to allow for thermal expansions while assuring efficient electric current and heat transfer between said ring and said pressure member.

4,368,373

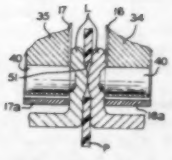
APPARATUS FOR FABRICATING THROUGH-THE-PARTITION BATTERY CONNECTIONS

Carl D. Schultz, Tiffin, and Robert D. Simonton, Fremont, both of Ohio, assignors to Mac Engineering & Equip. Co., Inc., Benton Harbor, Mich.

Filed Aug. 18, 1980, Ser. No. 178,808

Int. Cl.³ B23K *11/33*

U.S. Cl. 219—86.22 **6 Claims**



1. A welding head assemblage for interconnecting the upstanding lugs of plate straps connected to the positive and negative grids of adjacent battery cell units through an aperture provided in a partition separating the cell units from each other, the welding head assemblage comprising: an electrode unit having a pair of opposed high conductivity electrode jaws adapted to fit about the partition and into the adjacent cell units and overlie the upstanding lugs, each jaw having therein an aperture aligned with the partition aperture; means for moving said electrode jaws relatively toward each other for compressing the upstanding lugs against the partition; an extruding jaw movably mounted relative to each said electrode jaw and having a forging plunger adapted to pass through said electrode jaw aperture; means for electrically insulating said extruding jaws from said electrode jaws; means for moving said extruding jaws relatively towards each other and relative to said electrode jaws for extruding a portion of each upstanding lug into the partition aperture and into contact with each other; and means for passing an electric current through said electrode jaws, and without passing current through said extruding jaws, for fusing together the contacting portions of the upstanding lugs and filling the partition aperture so as to form a sealed connection between the cell units of the battery.

4,368,374

VACUUM CHAMBER FOR ELECTRON BEAM BUTT WELDING OF PIPES

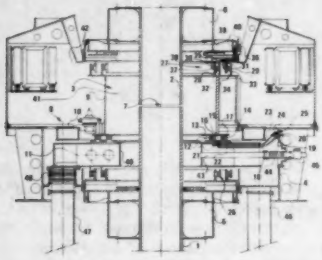
Bruno de Sivry, Paris; Bernard Sudreau, Puteaux; Claude Carsac, St Leu la Foret; Jean-Pierre Hamon, Cergy, and Michel Fuzeau, Parthenay, all of France, assignors to Compagnie Francaise des Petroles, Paris, France

Filed Apr. 21, 1981, Ser. No. 256,210

Claims priority, application France, Apr. 25, 1980, 80 09344

Int. Cl.³ B23K *15/00*

U.S. Cl. 219—121 EN **11 Claims**



1. A vacuum welding chamber for use in the butt welding by an electron beam of two elongate pipes which extend coaxially in their longitudinal directions at a center of the chamber, comprising: an envelope **(4)** defining a generally cylindrical enclosure **(3)** for housing at least one electron gun and associated equipment **(8)** for supporting, positioning and displacing the electron gun relative to a butt joint to be welded between two pipes, retractable, spaced sealing means **(5,6)** for sealing respectively against each of two elongate pipes **(1,2)** and individually provided at opposite longitudinal ends of said envelope, means **(9,10,11)** dividing said enclosure into two parts including a central cylindrical sub-enclosure **(41)** for receiving the elongate pipes when said sealing means are retracted, and a peripheral cylindrical sub-enclosure **(42)** radially surrounding said central sub-enclosure for containing the electron gun and associated equipment, and a plurality of retractable sealing gasket means **(12,26,27)** individually disposed both longitudinally between said envelope and said dividing means, and within said dividing means for selectively communicating said central and peripheral sub-enclosures with each other or isolating them from each other, whereby said peripheral sub-enclosure may be maintained constantly under vacuum, while said central sub-enclosure may be isolated from said peripheral sub-enclosure by said retractable sealing gasket means between welding operations, and placed in communication with said peripheral sub-enclosure during welding operations.

4,368,375

WELDING TORCH OSCILLATING MECHANICAL APPARATUS

George J. Merrick, Franklin; George E. Cook, Brentwood, and Donald D. Modglin, Nashville, all of Tenn., assignors to The Merrick Corporation, Nashville, Tenn.

Continuation of Ser. No. 120,049, Feb. 11, 1980, abandoned, which is a division of Ser. No. 857,359, Dec. 5, 1977, Pat. No. 4,188,525, which is a division of Ser. No. 54,975, Feb. 3, 1976, Pat. No. 4,145,593. This application Apr. 2, 1982, Ser. No. 365,043

Int. Cl.³ B23K *9/12*

U.S. Cl. 219—125.12 **6 Claims**

1. Apparatus for positioning a welding torch in two axes with respect to a weld path, comprising:

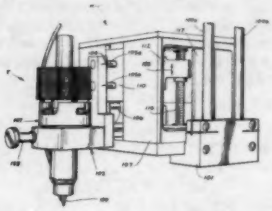
mounting means supported in predetermined relation to the weld path;

first movable means carried by said mounting means and supported for movement along a first axis;

first motive means comprising a stationary portion supported in fixed relation to said first movable means and a second portion selectably operative to position said first movable means along said first axis;

second movable means carried by said first movable means and supported for movement relative to said first movable means along a second axis;

second motive means comprising a stationary portion supported in fixed relation to said first movable means and



said second means and a second portion operative to selectably position said second movable means along said second axis independently of the position of said first movable means along said first axis; and

welding torch support means carried by said second movable means for movement along either of said axes relative to the weld path, whereby the mass of the stationary portion of each motive means is excluded from the mass being positioned by the motive means.

4,368,376

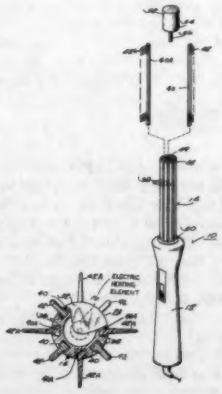
CURLING IRON WITH REMOVABLE GROOMING BARS

Matthew L. Andis, Racine, Wis., assignor to Andis Company, Racine, Wis.

Continuation-in-part of Ser. No. 59,676, Jul. 23, 1979, and Ser. No. 120,511, Feb. 11, 1980. This application Jan. 5, 1981, Ser. No. 222,590

Int. Cl.³ A46B *15/00*; A45D *24/10, 1/18*; H05B *3/02*

U.S. Cl. 219—222 **1 Claim**



1. A curling iron comprising a handle, a housing extending from said handle and including an interiorly located heating element, said housing having a longitudinal axis and an outer peripheral cylindrical surface radially spaced from said longitudinal axis, said outer surface including means defining an even number of longitudinally extending grooves, and support bars located in said grooves and each including therealong a

plurality of longitudinally spaced teeth extending radially outwardly from said longitudinal axis with the outer ends of said teeth in said rows being spaced from the outer ends of said teeth in adjacent rows at a distance greater than the spacing between said rows adjacent said outer peripheral surface of said housing, said bars being arranged in alternating first and second series, said bars and said teeth thereon of said first series being fabricated of a material having a first heat transmissibility and said teeth thereof having a first radial extent, and said teeth on said bars of said second series being fabricated of material having a second heat transmissibility lower than said first heat transmissibility and having a second radial extent greater than said first radial extent, and an end member removably attached to said housing and including means extending across said grooves for preventing removal of said bars from said grooves.

4,368,377

METHOD AND APPARATUS FOR ACHIEVING A DRAUGHT-FREE ENVIRONMENT

Stig-Eric Smeds, Aldersbo, S-730 73 Ransta, Sweden

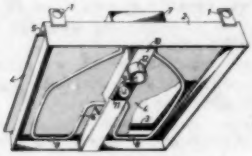
PCT No. PCT/SE80/00026, § 371 Date Sep. 30, 1980, § 102(e) Date Sep. 30, 1980, PCT Pub. No. WO80/01605, PCT Pub. Date Aug. 7, 1980

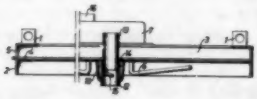
PCT Filed Jan. 30, 1980, Ser. No. 204,372

Claims priority, application Sweden, Jan. 30, 1979, 7900814

Int. Cl.³ F24D *13/02*; H05B *1/02*; A01K *1/02*

U.S. Cl. 219—345 **7 Claims**





1. A heating ceiling having a substantially flat extension over a defined zone of a larger room for obtaining a draught-free environment defined to said zone and having a hole formed in the heating ceiling, said heating ceiling comprising:

a frame-shaped element;

a heat source mounted within and adjacent to said frame-shaped element and having energy supply means connected thereto;

downwardly facing reflector means movably mounted within said frame-shaped element;

a control circuit mounted on said frame-shaped element for controlling said energy supply means wherein said control circuit means further comprises a temperature sensor and wherein the reflector means further comprises a flat-shaped reflector means arranged to reflect radiated heat from one or more heat producing bodies to be positioned within said zone and also reflect supplementary additional heat from said heat source wherein said heat source is arranged in the immediate vicinity of a downward side of the reflector means;

air passage means mounted in said heating ceiling for allowing air rising from the defined zone under the heating ceiling to pass therethrough wherein the air passage means further comprises a first pipe connected to said frame-shaped element, a second pipe connected to said first pipe and means for removably interconnecting said second pipe with said first pipe; and

a temperature sensor mounted in said first pipe to sense the temperature of the air rising from the defined zone and passing through the air passage means.

4,368,378

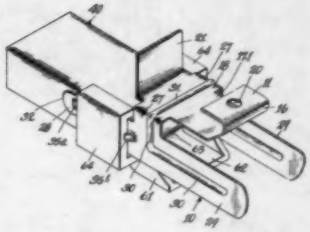
ELECTRIC HEATING ELEMENTS

David F. Jacobs, Pittsburgh, Pa., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Nov. 6, 1978, Ser. No. 957,891

Int. Cl.³ H05B *3/08*

U.S. Cl. 219—451 **6 Claims**



1. In an assembly for a plug-in electrical heating element for a stove, comprising a terminal block of rigid dielectric material having openings configured to receive terminals on the heating element and containing conductor elements resiliently engageable with said terminals, and a sheet-metal mounting bracket connectable to a part of the panel of said stove and adapted to support said terminal block, the improvement comprising:

means providing a socket in said terminal block,

finger means on said mounting bracket having plug-in connection with said socket,

said finger means being adapted to be seated within said socket and when so seated, having spaced abutments engageable with marginal surfaces defining said socket to maintain the assembly of said terminal block with said mounting bracket,

said finger means being in the form of a tapered bladelike member and said socket being in the form of a rectangular, narrow opening to receive said bladelike member in flatwise relation, the taper of said member and the spacing of said abutments providing for vertical swinging movement of said terminal block relative to said mounting bracket.

4,368,379

TOASTER HAVING TOASTING CONTROL FOR CONVENIENCE FOODS

Charles E. Swanson, Chicago, Ill., assignor to Sunbeam Corporation, Chicago, Ill.

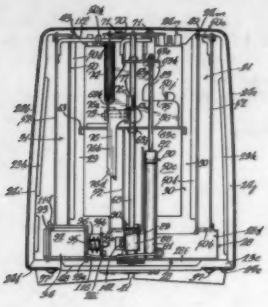
Filed Jun. 7, 1971, Ser. No. 150,544

Int. Cl.³ H05B *1/02*

U.S. Cl. 219—494 **11 Claims**

1. An electric toaster for receiving slices of food therein comprising control means for reducing the power utilized by said toaster from a first power level to a second lower power level, heating means constructed for providing substantially uniform heating of said slices of food for both of said power levels and adjustment means for adjusting the energy utilized by said heating means over an adjustment range to deliver a greater or lesser amount of energy to said food slices at either of said power levels; said control means being interconnected with said adjustment means to restrict said adjustment range when said power level is reduced to said second lower power level to a portion of said range for delivering a lesser amount of energy to said food slices as compared to the entire adjustment range available when said toaster is operated at said first power level, the interconnection between said control means and said adjustment means causing said adjustment means to be moved from a position on said energy range for delivering a

greater amount of energy to a portion of said energy range for delivering a lesser amount of energy when said control means



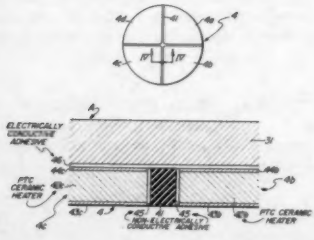
is moved from said first power level to said second lower power level.

4,368,380

FLEXIBLE CERAMIC PTC ELECTRIC HEATER ASSEMBLY

Toshihiko Igashira, Toyokawa; Ken Nomura, Okazaki, and Seiko Abe, Kariya, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Sep. 16, 1980, Ser. No. 187,941
Claims priority, application Japan, Oct. 26, 1979, 54-139005
Int. Cl.³ F02M *31/00*; H05B *3/02*; H01C *7/02*
U.S. Cl. 219—539 **9 Claims**



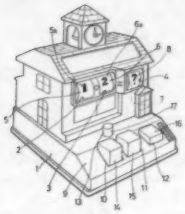
1. A flexible ceramic heater comprising a thin, planar disc-shaped electrically resistive ceramic member having at least upper and lower sides each of which is provided with an electrode layer through which electric current is supplied to said ceramic member to generate heat therein wherein said ceramic member is comprised of a plurality of individual, coplanar segments each of which is provided with two interior edges and one exterior edge, wherein each of said two interior edges of each segment lie adjacent an interior edge of another adjacent segment, at least predetermined portions of each of said two interior edges of each segment being connected together through means defining a flexible, electrically non-conductive medium to form said segments into a thin disc-shaped ceramic sheet which can be flexed without causing flexing of any of the individual segments.

4,368,381

NUMERAL ADDING TOY

Shozo Ishiyama, Tokyo, Japan, assignor to Kabushiki Kaisha Gakushu Kenkyusha (Gakken Co., Ltd.), Tokyo, Japan

Filed Jul. 15, 1981, Ser. No. 283,627
Claims priority, application Japan, Jul. 15, 1980, 55-99525[U]; Nov. 13, 1980, 55-162680[U]
Int. Cl.³ G06C *15/00*; G09B *1/00*
U.S. Cl. 235—1 C **15 Claims**



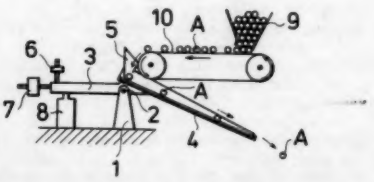
1. A numeral adding toy comprising:
a casing;
at least two first rotary wheels supported in said casing and having their outer circumferences displaying numerals to be added;
a second wheel rotatably supported in said casing and having its outer circumference displaying a numeral indicative of an added answer;
a plurality of engagement elements each mounted on one side of each of said first and second rotary wheels concentrically with said rotary wheels;
means having push clicks made engageable with said engagement elements of the respective rotary wheels for rotationally indexing said second rotary wheel and one of said two first rotary wheels in a simultaneous manner;
springs for biasing said respective rotary wheels in their returning directions;
stop clicks retaining said engagement elements of said respective rotary wheels for regulating the rotational returns of said respective rotary wheels; and
means for releasing the retaining states between said stop clicks and said engagement elements.

4,368,382

APPARATUS FOR COUNTING ARTICLES USING TORQUE

Yuzuru Nishiguchi, Higashi, Japan, assignor to Shinko Denshi Company Limited, Tokyo, Japan

Filed Nov. 3, 1980, Ser. No. 203,192
Claims priority, application Japan, Apr. 10, 1980, 55-47106
Int. Cl.³ G06G *7/00*
U.S. Cl. 235—92 PK **9 Claims**



1. An apparatus for counting the number of articles comprising
a measuring chute rotatably journalled to a horizontal shaft at its one end and being arranged in an inclined fashion so

that the articles can slide therealong downwards due to gravity;

a device for electrically measuring torque generated around said horizontal shaft when the articles pass through the measuring chute to produce a torque output; and

a measuring circuit for receiving said torque output to count the number of articles by detecting a variation of the torque output due to the discharge of the respective articles from a lower end of the measuring chute remote from ssid horizontal shaft.

4,368,383

SYSTEM FOR FOCUS DETECTION UTILIZING A PHOTOELECTRIC SENSOR ARRAY

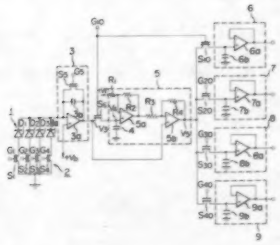
Hiroshi Shirasu, Kawasaki; Akira Ogasawara, and Ken Utagawa, both of Yokohama, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 97,868, Nov. 27, 1979. This application Aug. 20, 1981, Ser. No. 294,724

Claims priority, application Japan, Nov. 30, 1978, 53-147227; Dec. 25, 1978, 53-158693

Int. Cl.³ G01J *1/16*; G03B *3/00*

U.S. Cl. 250—201 **13 Claims**



1. In a light measuring device comprising photoelectric conversion means including a plurality of photoelectric conversion elements arranged in an optical path for converting light received thereon to respective electric signals of magnitudes corresponding to the light intensity, the photoelectric conversion means time-sequentially putting out the electric signals at a predetermined time interval; means for detecting the distribution of light on the photoelectric conversion elements, the improvement comprising:

amplifying means electrically connected between the photoelectric conversion means and the detecting means, the amplifying means including means for generating a comparison signal of a predetermined magnitude related to the output level of one of said electric signals, processing means for generating output signals related to the difference between the comparison signal and each of the other of said electric signals, and an amplifier for amplifying the output signals.

4,368,384

GAIN SETTING DEVICE FOR RADIATION IMAGE READ OUT SYSTEM

Hisatoyo Kato, and Masamitsu Ishida, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co. Ltd., Kanagawa, Japan

Filed Jul. 11, 1980, Ser. No. 168,798

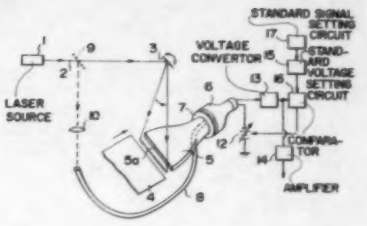
Claims priority, application Japan, Jul. 11, 1979, 54-87804; Jun. 4, 1980, 55-75317

Int. Cl.³ H05B *33/00*; G01J *1/32*; G01T *1/00*

U.S. Cl. 250—484.1 **6 Claims**

1. A read out gain setting device for a radiation image information read out device in which a stimulable phosphor plate is exposed to an imagewise radiation to store the energy of the radiation and record a latent image of a radiation image, the stimulable phosphor plate is exposed to stimulating rays to emit light having a wavelength different from the wavelength of the stimulating rays according to the stored energy radiation, and the emitted light is detected by an image information read out system including a photodetector,

said read out gain setting device comprising a stimulating ray receiving portion provided on a part of the light receiving face of said photodetector, means for taking out at



least a part of said stimulating rays and transmitting the taken out part of the stimulating rays to said stimulating ray receiving portion of said photodetector, means for comparing the output level of said photodetector with the level of a predetermined standard voltage, and means for controlling the read out gain of the image information read out system so as to make the output level of said photodetector equal to the level of said standard voltage.

4,368,385

OPTOELECTRONIC SWITCHES

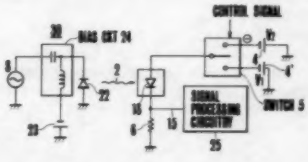
Hiroshi Kanbe, Tanashi, and Elmer H. Hara, Tokyo, both of Japan, assignors to Nippon Telegraph & Telephone Public Corp., Tokyo, Japan

Filed Dec. 12, 1980, Ser. No. 215,614

Claims priority, application Japan, Mar. 31, 1980, 55-41474; Jun. 18, 1980, 55-81316

Int. Cl.³ G02B *27/00*

U.S. Cl. 250—551 **20 Claims**



1. An optoelectronic switch comprising:

light source means for producing a light signal modulated by an electric signal to be switched;

optical-to-electrical converting means disposed to receive the light signal emitted by said light source means, and

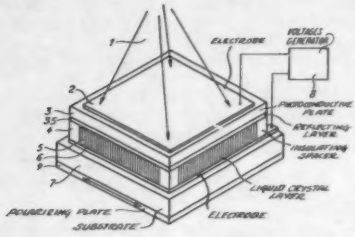
bias source means for applying reverse bias to said optical-to-electrical converting means to render ON and OFF the same;

said optical-to-electrical converting means being constituted by a photodiode formed by a first semiconductor having therein a p-n junction and a second semiconductor having a smaller energy band gap than said first semiconductor, and combined therewith to form a heterojunction.

4,368,386
LIQUID-CRYSTAL IMAGE CONVERTER DEVICE

Jean-Pierre Huignard; Serge Le Berre; Christian Mayeux, and Francois Micheron, all of Paris, France, assignors to Thomson-CSF, Paris, France

Continuation of Ser. No. 943,818, Sep. 19, 1978, abandoned. This application Feb. 3, 1981, Ser. No. 231,117
Claims priority, application France, Sep. 23, 1977, 77 28738
Int. Cl.³ G02F 1/135
U.S. Cl. 250—213 R 25 Claims



1. An image converter device for receiving an image projected by a write-in radiation and reading said image by a read-out radiation of visible light, comprising:

a liquid crystal layer wherein said image is at least temporarily inscribed for being read by said read-out radiation, said layer at least including a mesomorphic material having a nematic phase and being in an initial uniform orientation in the absence of said write-in radiation;

a first and second self supporting slab enclosing and completely supporting said layer; said first slab being 0.5 to 1 mm in thickness consisting of material which is photoconductive under the action of said write-in beam and being arranged for receiving said projected image; said second slab being transparent to said read-out radiation;

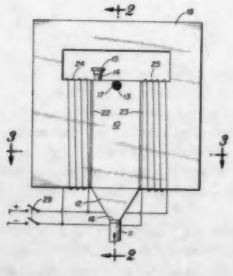
a first and a second electrode respectively arranged on the external face of said photoconductive first slab and the internal face of said transparent second slab and respectively transparent to said write-in and said read-out radiation;

voltage generating means for at least applying a control voltage between said first and second electrodes.

4,368,387
METHOD OF SEPARATING ISOTOPES

William A. Colburn, Denver, Colo., assignor to Magnesep Corporation, Denver, Colo.

Continuation-in-part of Ser. No. 35,001, May 1, 1979, abandoned. This application Apr. 24, 1981, Ser. No. 257,154
Int. Cl.³ H01S 1/00, 9/00; H05H 3/00
U.S. Cl. 250—251 10 Claims



1. The method for separating the isotopes of an element having isotopes of higher and lower magnetic moments for enrichment purposes which comprises:

providing a fluid stream or solution stream containing particles each particle containing only one atom of the element the isotopes of which are to be separated,

passing the stream through a mass of finely divided discrete bodies having high magnetic susceptibility,

applying a high intensity magnetic field to the mass while the stream is passing therethrough for retarding the passage of the isotope of higher magnetic moment,

directing the fluid after passage through the magnetized mass into a first vessel,

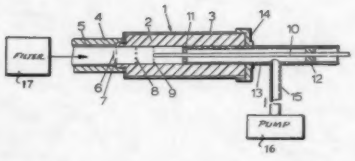
discontinuing the application of the magnetic field to the mass while maintaining the flow of the stream, and

directing the flow of the stream from the demagnetized mass into a second vessel for a period sufficient to flush the isotope of higher magnetic moment therefrom and to collect such isotope in the second vessel.

4,368,388
DETECTION OF POLAR VAPORS

David A. Blyth, Salisbury, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Division of Ser. No. 752,828, Dec. 14, 1976, abandoned. This application Nov. 15, 1979, Ser. No. 97,930
Claims priority, application United Kingdom, Dec. 15, 1975, 51362/75
Int. Cl.³ H01J 49/00, 49/22, 49/42
U.S. Cl. 250—283 19 Claims



1. A method of monitoring polar vapours in a gas comprising the steps of:

passing a continuous stream of gas through a passage;

ionizing said stream in a region of said passage so that any polar vapours present will react with the gas ions formed to generate ion clusters; and

collecting ions carried downstream by said gas stream at a location so that no substantial number of the gas ions remain in said stream while a substantial proportion of the ion clusters remain in said stream.

4. Apparatus for monitoring for polar vapours in a gas comprising:

a body member defining a passage through which a continuous stream of the gas may pass;

means for inducing a continuous flow of gas through said passage;

an ionizing source associated with a region of said passage such that ionization of the gas stream takes place substantially only within said region and also any polar vapour molecules present therein will react with the gas ions formed to generate ion clusters; and

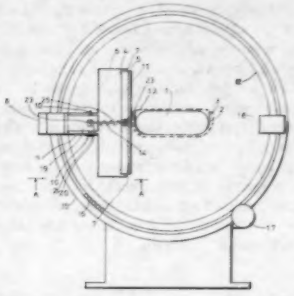
a collector electrode for collecting ions carried by the gas stream, said electrode being positioned in said passage downstream of said region and separated therefrom by a distance which is sufficient to ensure that no substantial number of the gas ions formed in said region remain in the gas stream at the collector electrode whilst ensuring that a substantial proportion of the ion clusters formed in said region remain in the gas stream at the collector electrode.

4,368,389

PHOTON EMISSION TOMOGRAPHIC APPARATUS AND METHOD

Alvin S. Blum, 2350 Del Mar Pl., Fort Lauderdale, Fla. 33301

Filed Jun. 26, 1980, Ser. No. 163,057
Int. Cl.³ G01T 1/20
U.S. Cl. 250—363 S 11 Claims



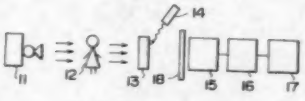
1. A rotational tomographic imaging system for detecting and displaying the distribution in depth of radiation emitting materials within a body with collimated radiation detector means and body support means, comprising: detector support means; detector rotation means; and body contour following means, said body contour following means causing the collimator face to be adjacent to the surface of said body and said body support means as said detector means is rotated about said body to minimize detector/body distance for improved image resolution.

4,368,390

RADIATION IMAGE STORAGE PANEL

Kenji Takahashi, and Junji Miyahara, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 11, 1980, Ser. No. 168,794
Claims priority, application Japan, Jul. 11, 1979, 54-87801
Int. Cl.³ G01F 1/20
U.S. Cl. 250—363 R 31 Claims



1. A radiation image storage panel having a fluorescent layer comprising a binder and a stimulable phosphor dispersed therein upon stimulation by rays having a wavelength ranging from 500 to 800 nm, wherein said phosphor is characterized in that said panel has a light-reflecting metallic layer on one side thereof with respect to the fluorescent layer opposite to the side exposed to the stimulating rays for said stimulable phosphor and that said phosphor is represented by the following general formula I or II;

$$LnOX:aA \quad (I)$$

wherein Ln represents an element selected from the group of La, Y, Gd and Lu, X represents an element selected from the group of Cl and Br, A represents an element selected from the group of Ce and Tb, and a is a number satisfying the condition of $0<a<0.1$;

$$(Ba_{1-x}M^{II}_x)FX_1:yA_1 \quad (II)$$

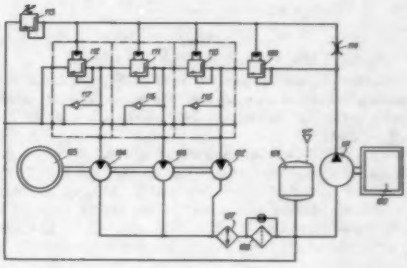
wherein M^{II} represents at least one divalent metal selected from the group consisting of Mg, Ca, Sr, Zn and Cd, X_1 represents at least one halogen selected from the group consisting of Cl, Br and I, A_1 represents at least one element selected from the group consisting of Eu, Tb, Ce, Tm, Dy, Pr, Ho, Nd, Yb and Er, and x and y are numbers satisfying the conditions of $0 \leq x \leq 0.6$ and $0 \leq y \leq 0.2$.

4,368,391

HYDRAULIC PROCESS AND APPARATUS FOR THE RECOVERY OF ELECTRICAL ENERGY FOR USE IN MOTOR TEST STATIONS

Olivier Hellouin de Menibus, Estampes, France, assignor to A M S S.A., Fresnes, France

Filed Dec. 19, 1980, Ser. No. 218,494
Claims priority, application France, Dec. 28, 1979, 79 32037
Int. Cl.³ H02P 9/00
U.S. Cl. 290—4 D 29 Claims



1. A hydraulic process for recovering electrical energy from the energy furnished by a motor being tested, said process comprising:

(a) coupling a shaft on a motor being tested, which is adapted to turn at variable speeds, to a hydraulic pump;

(b) feeding a plurality of hydraulic motors by said hydraulic pump; and

(c) coupling said hydraulic motors to an asynchronous electric generator in series and connecting said generator to an electric power supply, said hydraulic motors adapted to operate as pumps by hydraulically feeding themselves and consuming a low electric power and adapted to serve as motors by then furnishing energy to the asynchronous generator.

4,368,392

WATER TURBINE

Herman M. Drees, Cotuit, Mass., assignor to Pinson Energy Corporation, Marstons Mills, Mass.

Filed Jun. 3, 1981, Ser. No. 269,701
Int. Cl.³ F03B 3/14; F03D 7/06
U.S. Cl. 290—54 18 Claims

1. A water turbine for generation of electrical power from a flowing body of water, comprising

a plurality of vertically-extending blades, each with a hydrofoil horizontal cross section,

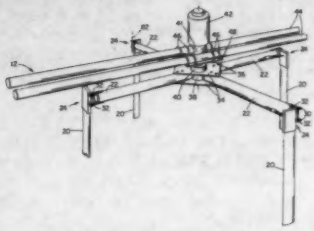
a blade support structure supporting the upper ends only of said blades,

said blade support structure including a central hub and radially extending elements extending from said hub for supporting said blades located radially of said hub,

an electrical-power generator connected to said central hub,

pitch control means for cyclically pitching said blades to maintain said blades at useful angles of attack for generation of electrical power, said pitch control means including means for independently controlling the pitch of indi-

vidual blades in response to the instantaneous local flow conditions in the vicinity of the individual blade, and



means for supporting said generator and blade support structure above the surface of said flowing body of water so that essentially only said blades penetrate said body of water.

4,368,393

ROTATIONAL DIRECTION SENSOR

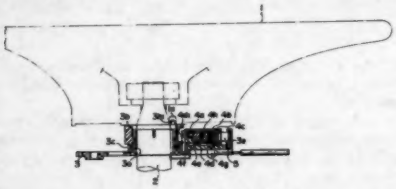
Minoru Izawa, Okazaki; Nobuhiro Takeda, Nagoya, and Tasuku Nakano, Mizunami, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Tokai Rika Co. Ltd., both of Aichi, Japan

Filed Oct. 24, 1980, Ser. No. 200,214

Claims priority, application Japan, Oct. 31, 1979, 54-150010[U]

Int. Cl.³ H01H *19/14*; B60Q *1/00*; H01H *3/16*

U.S. Cl. 307—115 **12 Claims**



1. A rotational sensor for a body which has a preferred neutral rotational position, and which is rotatable from said neutral position in either a clockwise rotational direction or an anticlockwise rotational direction about an axis,

said rotational direction sensor comprising:

(a) an actuating assembly, which is rotated according to said rotation of said rotational body;

(b) a first switching means for switching electrical current, which is actuated by rotation of said actuating assembly in a clockwise rotational direction by more than a first predetermined amount from a first neutral rotational position and which is also actuated by rotation of said actuating assembly in a clockwise rotational direction from a second rotational position to said first neutral rotational position, said second rotational position being defined by rotation of said actuating assembly by more than said first predetermined amount in an anticlockwise rotational direction from said neutral position, said first switching means, when actuated, at least momentarily conducting a first electric current, said first switching means not being actuated by rotation of said actuating assembly in the anticlockwise rotational direction, irrespective of the amount of said anticlockwise rotation;

(c) a second switching means for switching electrical current, which is actuated by rotation of said actuating assembly in an anticlockwise rotational direction by more than a second predetermined amount from said first neutral rotational position and which is also actuated by rotation of said actuating assembly in an anticlockwise rotational direction from a third rotational position to said first rotational position, said third rotational position being defined by rotation of said actuating assembly by more than said second predetermined amount in a clockwise rotational direction from said neutral position, said second switching means, when actuated, at least momentarily conducting a second electric current, said second switching means not being actuated by rotation of said actuating assembly in the clockwise rotational direction, irrespective of the amount of said clockwise rotation; and

(d) an electrical circuit which detects the switched electrical currents from said first and said second switching means, said electrical circuit generating a first electrical signal when it detects that said first and said second switching means are actuated successively in the order of actuation of said first and then said second switching means, and generating a second electric signal when it detects that said first and said second switching means are actuated successively in the order of actuation of said second and then said first switching means.

4,368,394

COMPUTER-CONTROLLED SWITCHING DEVICE

Hubert L. Naimer, Schumanng.33-37, Vienna A-1181, Austria

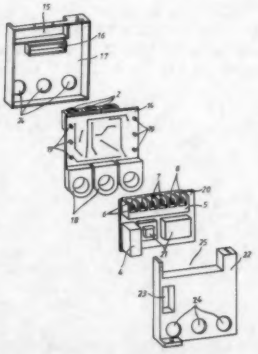
PCT No. PCT/AT80/00030, § 371 Date May 14, 1981, § 102(e) Date May 14, 1981, PCT Pub. No. WO81/01092, PCT Pub. Date Apr. 16, 1981

PCT Filed Sep. 26, 1980, Ser. No. 269,060

Claims priority, application Austria, Oct. 2, 1979, 6438/79

Int. Cl.³ H01H *19/14*

U.S. Cl. 307—115 **9 Claims**



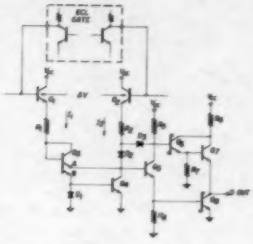
1. Computer-controlled switching device for controlling power switching elements for controlling devices wherein the computer is connected through an analog-digital converter to at least one detector monitoring the current consumption of the device being monitored, and emits switching signals when predetermined values are exceeded and/or are not reached, characterized in that the detector responsive to the magnetic field of the conductor leading to the device to be monitored, the analog-digital converter, the computer comprised of a microprocessor, adjusting elements connected thereto for the input of comparison values and additional characteristic data, a switching element controlled by the output of the computer, and associated terminals are combined into a unit module, this unit module as well as a housing therefor defines passages for the conductors leading to the device to be monitored, and the detector is arranged in their proximity.

4,368,395

DIFFERENTIAL LINEAR TO DIGITAL TRANSLATOR

David L. Taylor, Carrolton, Tex., assignor to Harris Corporation, Melbourne, Fla.

Filed Jul. 18, 1980, Ser. No. 170,291
Int. Cl.³ H03K 19/086, 19/088
U.S. Cl. 307—455 7 Claims



1. A linear-to-digital translator of the differential type for differentially sensing a linear logic signal and translating said sensed signal to one compatible with a TTL gate, comprising:

first and second input means for differentially sensing said linear logic signal;

first and second circuit means each including a resistor connected to said first and second input means;

a current mirror connected to said first and second circuit means, said current mirror including a transistor having a collector, base and emitter and producing a TTL gate compatible signal at its collector; and

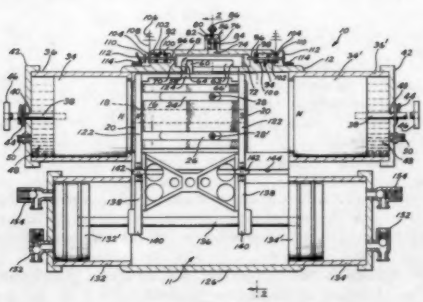
clamping means, including a multi-emmitter device having a first emitter connected to said collector of said transistor and a second emitter connected to said base of said transistor, for clamping said transitor out of saturation when its output is the low level of said TTL gate compatible signal.

4,368,396

RECIPROCATING ELECTRIC MOTOR WITH PERMANENT MAGNETS

James A. Humphrey, P.O. Box 295, Shelbyville, Ky. 40065

Filed Nov. 20, 1980, Ser. No. 208,807
Int. Cl.³ H02K 33/18
U.S. Cl. 310—27 14 Claims



1. In a reciprocating drive motor comprising:

a. a housing having guide means for supporting a movable electromagnet for reciprocating motion, the opposite ends of the electromagnet being of opposite polarities;

b. electrical circuit means for energizing the electromagnet with alternate current flows to obtain alternate polarities of the electromagnetic field surrounding the electromagnet;

c. a permanent magnet means positioned at a spaced distance at each end of the stroke of the movable electromagnet for creating both a strong magnetic field attraction force between the electromagnet and one of the permanent magnet means and a strong magnetic field repulsion force between the electromagnet and the opposite permanent magnet means, the same poles of the two permanent magnet means being positioned to face each other and being aligned with the adjacent end of the electromagnet;

d. an electrical switching means operated by the position of the electromagnet at each end of its stroke for reversing the flow of current within the electromagnet so as to reverse the polarity of the opposite ends of the electromagnet and thereby reverse the magnetic field forces between the electromagnet and the pair of permanent magnet means for reversing the direction of movement of the electromagnet within the motor housing to produce the reciprocating motion of the electromagnet;

e. a driven means actuated by the reciprocating motion of the electromagnet for producing work;

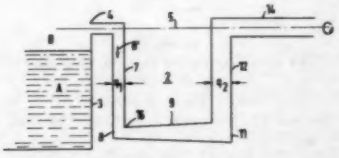
f. the said pair of permanent magnet means being adapted to be adjustably mounted within the housing toward or away from the opposite ends of the electromagnet so as to be able to adjust the magnetic field force acting upon the electromagnet, and hence the speed of the motor, depending upon the distance separating the two adjustable permanent magnet means from the adjacent end of the electromagnet at the ends of its stroke.

4,368,397

ARRANGEMENT FOR DEEP COOLING A FIELD WINDING IN THE ROTOR OF AN ELECTRIC MACHINE

Christoph Schnapper, and Lutz Intichar, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 12, 1980, Ser. No. 148,829
Claims priority, application Fed. Rep. of Germany, May 22, 1979, 2920720; May 22, 1979, 2920742
Int. Cl.³ H02K 9/00
U.S. Cl. 310—52 22 Claims



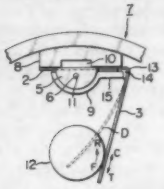
1. In an arrangement for deep cooling a field winding, in the rotor of an electric machine with a rotor axis and a corotating mixing chamber which contains a coolant mixture of vaporous and liquid components supplied from the outside through a feed line and to which are connected a first discharge line for the discharge of a first, liquid coolant stream to cool the field winding, and near the rotor axis, a second coolant discharge line running between areas of different temperatures, the second discharge line being designed in form of a centrifugal pump to pump a second, gaseous coolant flow out of the mixing chamber and containing at least one colder line part which runs essentially radial relative to the rotor axis, leading away from the rotor axis, followed by warmer line parts leading back to the vicinity of the rotor axis, there being a connecting point between said colder line part and said warmer line parts, the improvement comprising the maximum flow cross section of the colder line part of the second discharge line being at the most half the size of the maximum flow cross section of the warmer line parts leading back to the vicinity of the rotor axis.

4,368,398

SMALL ELECTRIC MOTOR WITH REINFORCED BRUSH HOLDER

Takaichi Mabuchi, Matsudo, Japan, assignor to Mabuchi Motor Co. Ltd., Japan

Filed Feb. 6, 1980, Ser. No. 119,131
Claims priority, application Japan, Feb. 19, 1979, 54-20074[U]; Aug. 31, 1979, 54-119934[U]
Int. Cl.³ H02K 13/00
U.S. Cl. 310—248 2 Claims



1. A small electric motor having a motor case cover, a commutator and a brushgear, said motor comprising brushes made of an electrically conductive and resilient material, each of said brushes having bent portions bent at a predetermined angle to form a brush base and a commutator slide with said commutator slide extending from said respective bent portion into resilient contact with the commutator of said motor, and brush supporting portions provided on the motor case cover for supporting said brush bases in such a manner that said commutator slides are brought into resilient contact with said commutator of said motor, said brush supporting portions each including a first section for supporting the central part of the brush base and second sections for supporting both sides of the brush base and characterized in that said commutator slide, in an unconstrained state, is bent in advance toward the commutator side so that said commutator slide assumes a straight line when said commutator slide is brought into resilient contact with said commutator and rigid reinforcing portions are provided on the bent portions to provide rigidity to said bent portions.

4,368,399

ROTOR END TURN WINDING AND SUPPORT STRUCTURE

Sui-Chun Ying, Monroeville, and Donald C. Litz, Murrysville Boro, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 17, 1981, Ser. No. 293,821
Int. Cl.³ H02K 3/46
U.S. Cl. 310—270 17 Claims

1. A dynamoelectric machine rotor, comprising:

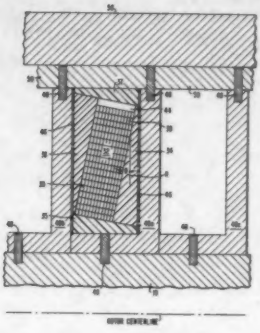
a field winding comprising a straight portion and an end turn portion, said straight portion being disposed in axial slots machined in said rotor, said end turn portion extending axially from said slots;

said end turn portion comprising a plurality of coils, each of said coils comprising a plurality of conductor stacks, each of said stacks comprising a plurality of conductors, each of said stacks extending radially from said rotor at a preselected angle from a plane which is perpendicular to the centerline of said rotor;

a plurality of arcuate support blocks, each of said support blocks having a generally L-shaped cross-section comprising an axial and a radial leg, said coil stack being disposed radially adjacent to said axially extending leg and axially adjacent to said radially extending leg;

insulative means for preventing electrical communication between said conductor coil and said support block;

an end turn cylinder disposed radially outward from said conductor coils and said support blocks; and



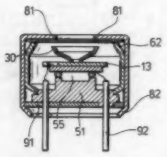
a retaining tube disposed radially outward from said end turn cylinder.

4,368,400

PIEZOELECTRIC ULTRASONIC TRANSDUCER MOUNTED IN A HOUSING

Yoshiharu Taniguchi; Masanori Akiyama, and Osamu Kinoshita, all of 380-1, Yasunaga Hotta, Tottori-shi, Tottori 680, Japan

PCT No. PCT/JP80/00104, § 371 Date Jan. 15, 1981, § 102(e) Date Jan. 14, 1981
PCT Filed May 14, 1980, Ser. No. 232,042
Claims priority, application Japan, May 15, 1979, 54/060015
Int. Cl.³ H01L 41/08
U.S. Cl. 310—322 1 Claim



1. An ultrasonic transducer comprises:

a vibrating assembly:

a piezoelectric ceramic element,

a metal resonant plate engaging one surface of the ceramic element,

a radiator affixed to said resonant plate, and

two lead wires connected to said piezoelectric element, coated with silicon compound adhesive at the proximity of soldering onto the electrode surfaces of the ceramic element so as to preclude spurious vibrations and comprises:

a baseplate having two electrical terminals: first electrical terminal connected to the lead wire from the front electrode surface of the ceramic element and second electric terminal connected to the lead wire from the front electrode surface of the ceramic element,

an adhesive mount provided on the baseplate, whose circumperential wall has a diameter approximately coinciding with that of the node of the vibrator proper,

an air chamber encompassed by the bottom surface of the said vibrating assembly,

ring-shaped adhesive as will retain sufficient elasticity elasticity after curing and the side and bottom walls of said adhesive mount,

a metal soleplate,
a meshed metal grill,
a non-cylindrical holding member: stopper,
a housing which is slightly tapered and includes a field radiation pattern director.

4,368,401

TRANSDUCER PLATE FOR PIEZO-ELECTRICAL TRANSDUCERS

Erwin Martin, and Konrad Walliser, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 22, 1981, Ser. No. 227,465
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1980, 3005708
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—324 7 Claims

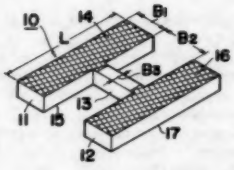
1. A transducer plate for telephone technology piezo-electrical transducers, comprising: a carrier plate and a piezo-ceramic member bound to the plate with an adhesive layer applied on one side thereof; electrodes on both sides of the piezo-ceramic member; the adhesive layer having a thickness selected to have an attenuating influence on excessive rises in resonance; and the adhesive layer having a thickness which amounts approximately to 20 to 50% of a thickness of a piezo-ceramic member having a diameter of 200 to 350 μm, and approximately 10 to 30% of a thickness of a carrier plate having a diameter of 40 to 45 mm.

4,368,402

H-TYPE CERAMIC RESONATOR

Michihiro Torii, Hamamatsu; Kohei Hirukawa, Kosai; Ryoji Tsuchiya, Hamamatsu; Hiroshi Urata; Isamu Sasaki, both of Kosai, and Kunio Esaki, Kosai, all of Japan, assignors to Fuji Electrochemical Co., Ltd., Tokyo, Japan

Filed Jul. 1, 1981, Ser. No. 279,615
Claims priority, application Japan, Jul. 2, 1980, 55-92051[U]; Jul. 17, 1980, 55-101007[U]; Jul. 24, 1980, 55-101462
Int. Cl.³ H01L *41/04;* H03H *9/02*
U.S. Cl. 310—367 6 Claims



1. An H-type ceramic resonator which has two longitudinal, parallel resonating leaves, a connecting leaf for connecting the two resonating leaves in an H-shape and electrodes at least on both surfaces of the resonating leaves, comprising a dimensional relationship which falls within the following ranges:

B_2/B_3=4 to 6,

B_1/B_3=2 to 4, and

L/B_1=5 to 6

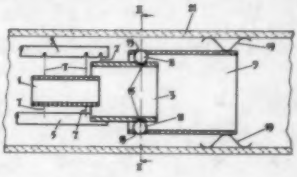
wherein L is a length of each of said resonating leaves, B_1 is a width of each of said resonating leaves, B_2 is a distance between the said two resonating leaves, and B_3 is a width of said connecting leaf.

4,368,403

ELECTRON GUN INCLUDING SUPPORT STRUCTURE FOR ACCELERATING LENS

David W. Lewis, High Wycombe, England, assignor to The M-O Valve Company Limited, London, England

Filed Aug. 28, 1980, Ser. No. 182,006
Claims priority, application United Kingdom, Jul. 9, 1980, 8022415
Int. Cl.³ H01J *29/48, 29/82*
U.S. Cl. 313—457 4 Claims



1. A cathode ray tube incorporating an electron gun including an accelerating lens comprising at least two tubular electrodes disposed coaxially at different positions along the path of the electron beam produced by the gun wherein the final electrode of the lens is at least partly supported from the adjacent electrode by means of at least three spherical spacer members which fit between overlapping portions of said final and adjacent electrodes of different diameters and are axially located in recesses in said portions, said adjacent electrode is supported from rods extending parallel to the axis of the electron gun outside said adjacent electrode, and said final electrode has a diameter at least as large as the diameter on which the support rods lie.

4,368,404

MATRIX-TYPE FLUORESCENT DISPLAY DEVICE

Ikuo Daisyaku, Ueno, Japan, assignor to Chowa Giken Kabushiki-Kaisha, Mie, Japan

PCT No. PCT/JP79/00104, § 371 Date Dec. 13, 1979, § 102(e) Date Dec. 13, 1979
PCT Filed Apr. 23, 1979, Ser. No. 179,294
Int. Cl.³ H01J *63/02*
U.S. Cl. 313—497 11 Claims

1. A matrix-type fluorescent dot display device which comprises:
a quadrilateral vacuum discharge space defined by a wall and an insulated substrate opposed to said wall, at least one of said wall and substrate being light-passable, the periphery of said wall being fixed by air-tight sealing means to the periphery of said substrate,
an anode wire array within said discharge space comprising a multitude of thin wires stretched in a plane parallel to and spaced apart from one another, said array being devoid of transverse wires,
a plurality of wire support members holding said wires of

said array in said parallel, spaced apart position above and out of contact with said substrate,

terminal means that extends outside said discharge space to connect the wires of said array to an electric voltage source,

the wires of said array being at least partially coated with fluorescent material that will fluoresce when bombarded by thermoelectrons,

cathode filaments positioned adjacent said wall within said discharge space provided with terminal means so said filaments may be electrically energized to emit thermoelectrons,

an electrically conductive grid comprising a multitude of thin wires positioned between said array and said cathode filaments within said discharge space, said grid wires being stretched in a plane parallel to and spaced apart from one another and perpendicular to said wires of said array, said plane of said grid being spaced apart and parallel to said plane of said array, said grid being devoid of transverse wires,

terminal means that extends outside said discharge space to connect the wires of said grid to an electric voltage source,

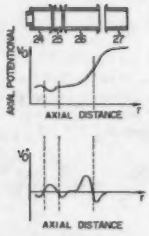
said grid serving to create luminous dots on the wires of said array when the wires of said array are energized by a predetermined positive voltage and the wires of said grid are also energized by a predetermined positive voltage.

4,368,405

ELECTRON GUN FOR A CATHODE RAY TUBE

Shigeo Takenaka, Fukaya; Eizaburo Hamano, Kumagaya, and Shinpei Koshigoe, Fukaya, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 961,855, Nov. 17, 1978, abandoned.
This application Sep. 26, 1980, Ser. No. 191,016
Claims priority, application Japan, Nov. 22, 1977, 52-139480; Dec. 27, 1977, 52-156501
Int. Cl.³ H01J *29/46, 29/56*
U.S. Cl. 315—16 **8 Claims**



1. A cathode ray tube system comprising:

an electron beam-generating source including a cathode, first grid electrode and second grid electrode; and

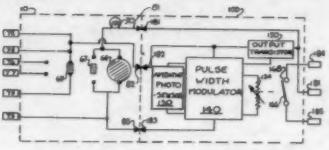
main lens means for substantially focusing electron beams emitted from said electron-beam generating source including first, second, third and fourth focusing electrodes arranged coaxially and in the order mentioned as counted from the second grid electrode of said electron beam-generating source and for creating an axial potential distribution having a function monotonically decreasing from a relatively intermediate potential level to a relatively low potential level from the first to the second focusing electrodes, and monotonically increasing from the relatively low potential to a relatively high potential level from the second focusing electrode to the fourth focusing electrode through the third electrode, and the second derivative of said function having two positive maximum values proximate the second and third focusing electrodes and three negative maximum values proximate the first, third and fourth focusing electrodes thereby forming a double lens construction.

4,368,406

LAMP DIMMER CONTROL WITH INTEGRAL AMBIENT SENSOR

Joseph K. Kruzich, Ann Arbor, and Sidney R. Fletcher, Franklin, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 29, 1980, Ser. No. 220,630
Int. Cl.³ H05B *37/02*
U.S. Cl. 315—158 **8 Claims**



1. An adjustable lamp dimmer for controlling illumination intensity of associated illuminated instruments and gauges comprising:

a housing;

a mounting substrate within said housing;

means mounted in said housing for movable adjustment on said substrate;

at least one variable resistor mounted between said substrate and said movable means for providing a different selected resistance for each adjustment thereof;

means mounted on said substrate for continuously sensing ambient light levels in the environment external to said housing of said lamp dimmer; and

means for monitoring the resistance of said variable resistor and said ambient light sensing means to provide a pulse width modulated output signal to control said illumination intensity of associated illuminated instruments and gauges as a function of sensed ambient light levels.

4,368,407

INDUCTOR-CAPACITOR IMPEDANCE DEVICES AND METHOD OF MAKING THE SAME

Theodore Wroblewski, Danvers, Mass., assignor to Frequency Technology, Inc., Littleton, Mass.

Filed Aug. 31, 1979, Ser. No. 71,706
Int. Cl.³ H01F *27/28*
U.S. Cl. 315—291 **8 Claims**

1. An improved inductor-capacitor assembly, which improvement comprises:

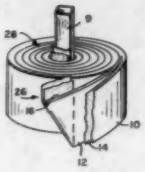
at least two elongated strips of thin conducting foil for forming respective input and output windings,

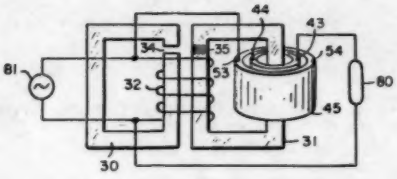
at least two elongated strips of dielectric material for separating and insulating the conducting foil, said dielectric material being coated on at least one side thereof with a bonding cement for improving the insulating and dielectric properties of said dielectric material,

both said conducting material and said dielectric material being rolled together to form a coil whereby the surfaces of the conducting foil and the dielectric material are in bounded contact with each other thereby to prevent displacement of the foil under electrical and magnetic forces and to seal the dielectric material and conducting foil from their external environment,

said coil further including an integral connection terminal disposed on at least one end of each of said input and output windings, each integral terminal being characterized as folded end portions of both the foil and dielectric material, the portions extending substantially parallel to

the axis of said windings and being substantially perpendicular to their lengthwise position before being folded, a segment of the end portion being folded over again to sandwich two layers of dielectric material between the





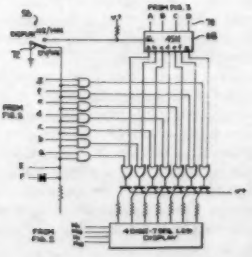
folded segment of the conducting foil thereby to produce an integral and durable connection terminal that is reinforced by the dielectric material sandwiched therebetween.

4,368,408

TIME CONTROLLED LIGHT DIMMER

Edward Marcus, P.O. Box 5342, 6508 Pimlico Rd., Baltimore, Md. 21209

Filed Jul. 17, 1981, Ser. No. 284,507
Int. Cl.³ H05B 37/02
U.S. Cl. 315—360 **17 Claims**



1. Control apparatus for reducing power supplied to utilization devices comprising:

(a) storage means for storing particular times for providing said reduced power;

(b) time keeping means for determining present time;

(c) comparing means for comparing present time with said stored times for providing said reduced power; and

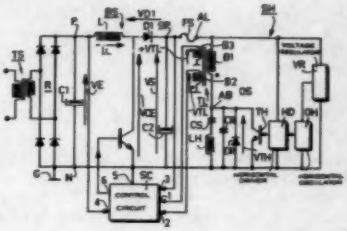
(d) activating means responsive to said comparing means for providing appropriate power to said lighting devices.

4,368,409

SWITCHING REGULATOR POWER SUPPLY DEVICE COMBINED WITH THE HORIZONTAL DEFLECTION CIRCUIT OF A TELEVISION RECEIVER WHICH IT SUPPLIES

Appukuddy Sivanesan; Erich Geiger, and Gerard Rilly, all of Paris, France, assignors to Thomson-Brandt, Paris, France

Filed Jun. 10, 1981, Ser. No. 272,267
Claims priority, application France, Jun. 10, 1980, 80 12862
Int. Cl.³ H01J 29/70
U.S. Cl. 315—411 **9 Claims**

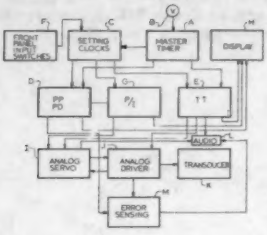


1. A power supply device with switching regulation and boosting of its DC output voltage, combined with a horizontal deflection circuit of a television receiver, supplied thereby and which comprises in cascade a horizontal oscillator, a driver stage and an output stage including a trace switch transistor and a line transformer, this device comprising an inductance and the collector-emitter path of a switching transistor connected in series between the poles of a DC input voltage source, a rectifying diode connected by its anode to the junction between the inductance and the collector of said switching transistor and by its cathode to one of the terminals of a filtering and storage capacitor whose other terminal is connected to the emitter of said transistor, so as to apply across its terminals an initial DC voltage slightly lower than said input voltage, when said switching transistor is turned off, and a regulated DC output voltage with a level higher than said input voltage, when said transistor is recurrently, alternately turned on and off, the level of said output voltage depending on the duty cycle of said switching transistor states, and a control circuit feeding the base of said switching transistor and including a regulator stage comparing an adjustable fraction of said output voltage to a fixed reference voltage and supplying a regulating current or voltage proportional to the difference between said compared voltages, a pulse-width modulator triggered by means of a recurrent signal and supplying a rectangular signal whose duty cycle varies as a function of said regulating current or voltage, another driver stage receiving the rectangular signal and controlling said switching transistor, the regulation and boosting of said output voltage being controlled by the initially independent starting up of the entire horizontal deflection circuit when supplied by said initial voltage from said power supply device as soon as a DC input voltage is applied thereto and which then delivers recurrent trigger pulses to said pulse-width modulator, one of the supply inputs of said other driver stage receiving directly a first voltage waveform whose positive alternations comprise constant-voltage plateau and whose negative alternations comprise negative-going horizontal flyback pulses provided by a first secondary winding of said line transformer, so as to control the turning off of said switching transistor substantially simultaneously with that of the trace switch transistor.

4,368,410
ULTRASOUND THERAPY DEVICE

Richard D. Hance, Elburn, and Edward J. Barsotti, Batavia, both of Ill., assignors to DynaWave Corporation, Geneva, Ill.

Filed Oct. 14, 1980, Ser. No. 196,647
Int. Cl.³ H02N 1/00
U.S. Cl. 318—116 20 Claims



1. A device to be used for delivering ultrasonic therapy to the tissue of a human body wherein said tissue has changing load characteristics, comprising:

a transducer for converting electrical power into ultrasound power,

manually operable input means,

a source of electrical power,

connecting means for selectively connecting said power source to said transducer,

timing means connected to and responsive to said manually operable input means for controlling said connecting means to apply electrical power to said transducer for a predetermined time, and

power setting means connected to and responsive to said manually operable input means, and connected to said connected means for controlling the level of power supplied to said transducer from said source, and

feedback means connected to said transducer for determining the electrical power used by said transducer, comprising means for monitoring the voltage and current signals delivered to said transducer and means for multiplying said signals to calculate power, and connected to said connecting means for adjusting the electrical power supplied to the transducer in response to said changing tissue loads.

4,368,411
CONTROL SYSTEM FOR ELECTRIC MOTOR

H. Keith Kidd, Christianburg, Va., assignor to Kollmorgen Technologies Corporation, Dallas, Tex.

Filed Jul. 13, 1981, Ser. No. 282,797
Int. Cl.³ G05B 11/28
U.S. Cl. 318—254 15 Claims

1. A system for controlling energization of an electric motor from an electric power source, comprising;

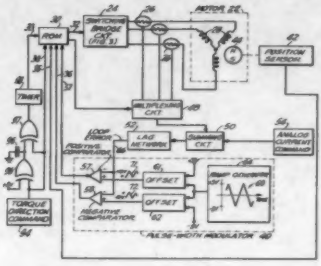
a switching circuit including switching devices for selectively connecting windings of the motor to the power source in accordance with the rotor position of the motor;

an error signal generating circuit for providing an error signal according to the difference between a control command an an actual motor condition; and

a pulse-width modultion control circuit responsive to said error signal and operatively connected to control said switching devices in said switching circuit

to provide increased duty cycle pulse-width modulation control of said switching devices as said error signal approaches zero when operating the motor in a regenerative mode, and

to provide decreased duty cycle pulse-width modulation control of said switching devices as said error signal

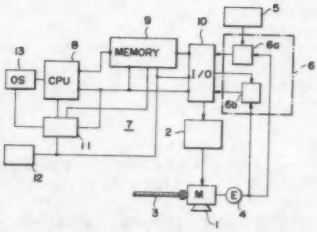


approaches zero when operating the motor in a motoring mode.

4,368,412
MICROPROCESSOR-CONTROLLED MOTOR DRIVE CONTROL SYSTEM

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Feb. 4, 1981, Ser. No. 231,433
Int. Cl.³ G05D 23/275
U.S. Cl. 318—632 6 Claims



1. A drive control system for a motor, comprising:

a driver circuit connected to the motor;

a signal input unit for receiving an input command signal representing a desired extent of angular displacement of the motor and generating a train of pulses representing said command signal;

a microcomputer having an input/output interface connected to said driver circuit, and a central processing unit for producing a control command signal and applying said control command signal to said driver circuit, thereby providing from the latter a drive signal for said motor in accordance with said control command signal;

an encoder for sensing an angular displacement of said motor being achieved by said drive signal and producing a succession of pulses representing said angular displacement being sensed;

logic-circuit means connected between said encoder and said interface and between said signal input unit and said interface, said logic circuit means including a differential counter receiving said pulses from said signal input output and said encoder for registering a differential count thereof and applying the differential count to said interface to produce the modification of said control command signal in accordance therewith and consequentially said drive signal; and

an interrupt unit associated with said microcomputer for intermittently providing an interrupt signal to said central

processing unit, thereby permitting the latter signal to execute said modification of the control command signal.

4,368,413

RECORDING APPARATUS

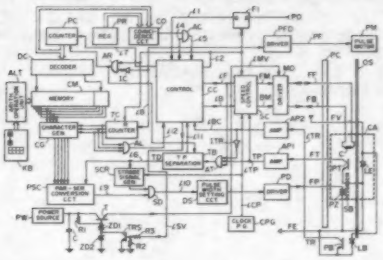
Shigemitsu Tazaki, Matsudo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1980, Ser. No. 192,218

Claims priority, application Japan, Oct. 26, 1979, 54/139553

Int. Cl.³ G05B *11/00*

U.S. Cl. 318—687 **5 Claims**



1. A recording apparatus comprising:

a carriage having a recording head mounted thereon;

a motor for moving said carriage reciprocally in a recording direction, and at the predetermined rate in a return direction;

first detecting means for detecting the presence and absence of recording information and for coveying the recording information to said recording head;

second detecting means for detecting when said carriage is in a home position area;

protection means disposed adjacent to the home position area of said carriage for protecting said recording head; and

drive means, which operates upon detection by said second detecting means of the return of said carriage to the home position area, for driving said motor in said recording direction to continue recording of information when said first detecting means detects the presence of information to be recorded, and for continuing the return drive of said motor at a rate less than said predetermined rate when said first detecting means detects the absence of information to be recorded, thereby placing said carriage at a position where said recording head thereon contacts said protection means.

4,368,414

PULSE MOTOR DRIVING DEVICE OF SEWING MACHINES

Kazuo Watanabe, Hachioji, and Hahiro Makabe, Fussa, both of Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

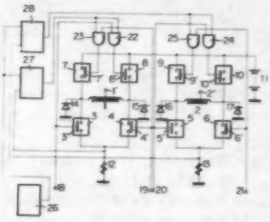
Continuation of Ser. No. 925,467, Jul. 17, 1978, abandoned. This application Jan. 10, 1980, Ser. No. 110,850

Claims priority, application Japan, Jul. 20, 1977, 52-86895; Nov. 25, 1977, 52-140743

Int. Cl.³ H02P *5/00*

U.S. Cl. 318—696 **1 Claim**

1. A pulse motor driving device for a pulse motor having a plurality of windings each connected to a driving power source comprising detecting means for detecting a value of electric current flowing through the windings; reference voltage generating means producing a triangular wave signal of a predetermined period; comparator means comparing the detected value of electric current of the windings and the triangular wave signal, said comparator means producing a chopping signal providing a period for applying the voltage of the driving power source to the windings each time the level of the triangular wave signal becomes higher than that of the electric current of the windings; bridge circuits each composed of four switching elements for each of the windings, said bridge circuits being each connected to the driving power source through said detecting means at a point thereof between the joints of the adjacent switching elements on one diagonal of the bridge circuit, and each having the winding connected between the joints of the adjacent switching elements on the other diagonal of the bridge circuit; switching element control means for controlling the switching operation of the opposite switching elements in each of the bridge circuits, said switching element control means selectively applying a driving pulse signal to one of the opposite switching elements in each bridge



circuit, which is connected to the respective detecting means to continuously make the switching element on and off, and selectively controlling the switching operation of the other of the switching elements in each bridge circuit in accordance with the chopping signal of the comparator means so as to supply the voltage of the driving power source to the switching element while the switching element is on due to the chopping signal; and diodes connected between one pole of the driving power source and both ends of the windings respectively, said diodes forming a short-circuit in which the electromagnetic energy of the windings may flow through said detecting means and said ones switching elements connected to the detecting means while the current flow from the driving power source to said others switching elements is blocked by the chopping signal.

4,368,415

CONVERTING SOLAR POWER TO ELECTRIC POWER

Ross A. Henderson, St. Werburghs, and Douglas A. Gregory, Long Ashton, both of England, assignors to British Aerospace, Weybridge, England

Filed Sep. 15, 1980, Ser. No. 187,447

Claims priority, application United Kingdom, Sep. 14, 1979, 7931895

Int. Cl.³ B64G *1/10*; B64C *39/02*

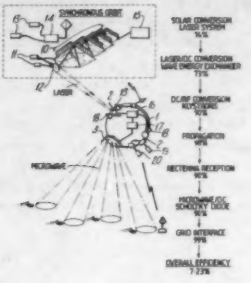
U.S. Cl. 322—2 R **2 Claims**

1. A solar energy system comprising:

a space vehicle supporting means for collecting solar energy and laser means for using the collected solar energy to form a laser beam directed towards a receiving position within the upper atmosphere of the earth,

an air-buoyant intermediate station for floating at said position within the upper atmosphere and supporting means for receiving said laser beam, means for converting the energy of the laser beam to microwave energy, and means

for directing said microwave energy as a beam towards a ground receiving position on the earth's surface, and



microwave energy receiving antenna means at said ground receiving position.

4,368,416

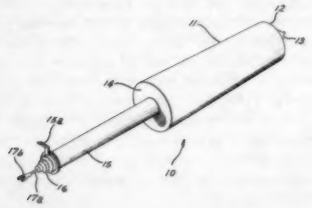
THERMIONIC-THERMOELECTRIC GENERATOR SYSTEM AND APPARATUS

Jasper L. James, deceased, late of Greeneville, Tenn. (by James I. Dye, administrator), assignor to James Laboratories, Inc., Greeneville, Tenn.

Filed Feb. 19, 1981, Ser. No. 235,954

Int. Cl.³ H02N *3/00*

U.S. Cl. 322—2 R **7 Claims**



1. Thermionic-thermoelectric generator system comprising:

a pair of thermionic-thermoelectric generator apparatus, each including a pair of axially aligned and concentric metal electrode cylinders closed at both ends to form an enclosed and evacuated space therein, at least the inner surface of the outer cylinder being coated with a thermionic electron emissive material to form a cathode and at least the facing surface of the inner cylinder being coated with graphite to form an anode, and including a thermopile series nested within the inner cylinder, the positive end of the series being electrically coupled to the anode, the negative end of the series being electrically coupled to the cathode, the generator apparatus further including external positive and negative terminals coupled to the anode and cathode, respectively;

a pair of output terminals adapted to be coupled to a load impedance;

and circuit means for alternately coupling each of the generator apparatus to the output terminals to provide a continuous electric current flow to the load impedance,

said circuit means comprising a pair of charging capacitors, a first pair of controlled current switching devices, each connecting a generator apparatus to a respective charging capacitor, a second pair of current switching devices, each connecting a charging capacitor to the output terminals of the system, and timing control circuits for operating the current switches in sequentially alternations so that, as one generator is coupled to its charging capacitor, the other generator is uncoupled from its charging capacitor, and during this time the charging capacitor of the other generator is coupled to the output terminals while the charging capacitor of the one generator is uncoupled from the output terminals, the timing circuits being adapted to periodically reverse this sequence of connections.

4,368,417

OUTPUT VOLTAGE-ADJUSTING DEVICE FOR VEHICLE-MOUNTED GENERATORS

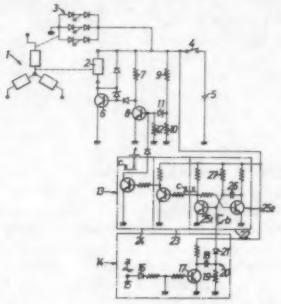
Youji Matsuyama, Higashiyamato, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1980, Ser. No. 221,192

Claims priority, application Japan, Dec. 29, 1979, 54-182818[U]

Int. Cl.³ H02J *7/14*

U.S. Cl. 322—29 **6 Claims**



1. An output voltage-adjusting device for vehicle-mounted generators comprising a generator drivably connected to an engine and having an electromagnetic coil, a battery, switching means provided in an electric circuit connecting said coil to said battery and operable to open said circuit upon receipt of an input signal, a signal means operably coupled to the engine for generating electric signals of a frequency corresponding to the running speed of the engine, and an oscillator which converts the output signals of said signal means into pulse signals of a predetermined width having a frequency proportional to the running speed of said engine and which sends the pulse signals as input signals to said switching means.

4,368,418

APPARATUS FOR CONTROLLING HIGH VOLTAGE BY ABSORPTION OF CAPACITIVE VARS

F. Paul DeMello, Burnt Hills, and Robert J. Ringlee, Schenectady, both of N.Y., assignors to Power Technologies, Inc., Schenectady, N.Y.

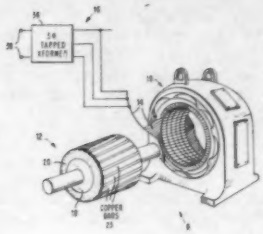
Filed Apr. 21, 1981, Ser. No. 256,062

Int. Cl.³ H02J *3/16*

U.S. Cl. 323—201 **19 Claims**

1. Apparatus for controlling high voltage by absorption of capacitive vars, comprising: a stator including a core and a stator windings connected to a source of said high voltage; and a rotor having a symmetrical uniform magnetic structure including a rotor spider made of a core of non-magnetic material disposed around the shaft of said rotor and a concentric outer cylinder of magnetic material around said non-magnetic core and designed to yield a sharp magnetic saturation, said rotor also including longitudinally extending damper bars made of a conducting material and attached to said rotor around the cylindrical rotor surface, said damper bars producing the required starting torque and damping of rotor oscillations, said rotor being operated with said stator as a free running, un-

loaded induction motor; whereby said rotor and said stator constitute a rotating induction reactor which functions similar



to a saturable reactor with respect to var versus voltage absorption but produces a negligible amount of harmonics.

4,368,419

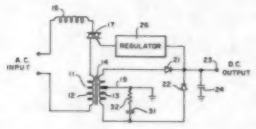
POWER SUPPLY AND METHOD UTILIZING APPLIED CURRENT FOR INCREASED HYSTERESIS SWING IN TRANSFORMER CORE

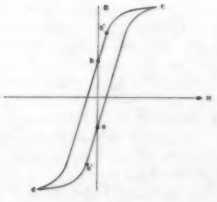
Joseph M. Welty, Hayward, Calif., assignor to Branson International Plasma Corporation, Hayward, Calif.

Continuation of Ser. No. 48,010, Jun. 13, 1979, abandoned. This application Mar. 16, 1981, Ser. No. 243,738

Int. Cl.³ G05F *1/455*

U.S. Cl. 323—239 **6 Claims**





1. In a method of operating a power supply having a transformer with a core of magnetizable material energized by an alternating current which is interrupted for a period of time during each half cycle thereof to regulate the output of the supply, the magnetization of said core being driven between maximum levels of opposite polarity during alternate half cycles of the energizing current, applying an additional current to the transformer during the periods of interrupted energizing current to maintain the core near the maximum level of magnetization to which it is driven during each half cycle so that the magnetization swings from near the maximum of one polarity to the maximum of the other polarity during each half cycle of the energizing current.

4,368,420

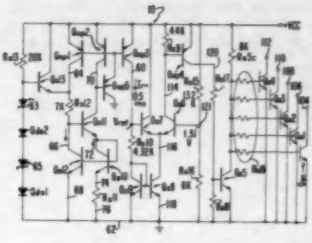
SUPPLY VOLTAGE SENSE AMPLIFIER

James R. Kuo, Cupertino, Calif., assignor to Fairchild Camera and Instrument Corp., Mountain View, Calif.

Filed Apr. 14, 1981, Ser. No. 254,338

Int. Cl.³ G05F *1/58, 3/20*

U.S. Cl. 323—303 **12 Claims**



1. A temperature-compensated supply voltage sense amplifier comprising: a first transistor circuit including a transistor means having a positive temperature coefficient of current for providing a positive temperature coefficient current in which the current increases with increasing temperature;

a second transistor circuit including a transistor means having a negative temperature coefficient of base-to-emitter voltage;

a third transistor circuit including transistors means forming a current mirror coupled between said first and said second transistor circuits for transferring said positive temperature coefficient current from said first transistor circuit into said second transistor circuit; and

a resistance means coupled between said third transistor circuit and said second transistor circuit for establishing a constant reference voltage at a first node between said resistance means and said current mirror, the magnitude of which is independent of temperature.

4,368,421

FREQUENCY MODULATED MICROWAVE IN COMBINATION WITH A VOLTAGE DETECTOR AND COMPARATOR DEVICE FOR MEASURING A VARYING MOISTURE CONTENT OF SHEET-LIKE SAMPLES

Siegfried Glander, Bad Soden am Taunus, and Franz Lappe, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 858,893, Dec. 8, 1977, abandoned. This application Aug. 6, 1980, Ser. No. 175,779

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1976, 7638683[U]

Int. Cl.³ G01R *27/04*; G01N *22/04*

U.S. Cl. 324—58.5 A **7 Claims**

1. A device for measuring the moisture content of a sheet-like sample with microwaves, which device comprises:

a microwave oscillator for providing an output of microwaves;

at least three horn transmitters;

a microwave receiver positioned opposite each horn transmitter, said horn transmitters and receivers being positioned so that a different portion of said sheet-like sample can pass between each of said transmitters and its associated receiver;

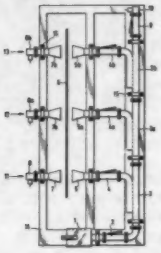
a separate microwave detector for producing an output signal having a signal level value which has a correspondence to the detected signal level value of microwaves received by each of said receivers at a set point condition;

a microwave distributing means for distributing a portion of the microwave output of said oscillator to each of said horn transmitters, said distributing means including direc-

tional couplers and also including a separately adjustable attenuator for each said horn transmitter such that the ratios between the signal level values of the output signal values produced by each of said detectors can be set to desired signal values at said set point conditions when the relative amount of moisture of said sheet-like sample placed between the horn transmitters and receivers associated with said detectors is known for each location between each of said transmitters and receivers;

means for controllably attenuating the level of the microwave output of said oscillator which attenuating microwave output is supplied to said distributing means such that the signal level output of one of said detectors tends to remain constant and interrelated to said means for controllably attenuating said oscillator, and

means including said separate microwave detector for measuring the relative signal level value of the microwave output which is supplied to said distributing means and detected at the other remaining detectors for measuring the moisture of the sheet-like sample and comparing, with the signal level output of each of the other remaining detectors, said signal value detected by said separate detector.

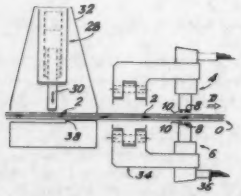


4,368,422

NON-DESTRUCTIVE TESTING METHOD AND APPARATUS FOR SPOT WELDS

Bernard Bachet, Marsannay la Cote, and Claude Doucelance, Talant, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Dec. 2, 1980, Ser. No. 212,149
Claims priority, application France, Dec. 14, 1979, 79 30700
Int. Cl.³ G01R *27/14*
U.S. Cl. 324—64 **8 Claims**



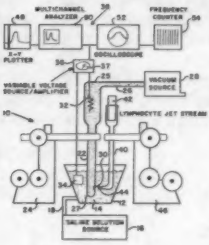
5. An apparatus for the non-destructive testing of spot welds, wherein it comprises a detection system formed by two identical measuring heads, each constituted by n pairs of measuring electrodes and n pairs of supply electrodes, each pair of said supply electrodes being associated with a pair of measuring electrodes, the two measuring heads being arranged symmetrically on the area surrounding the weld under investigation and are electrically connected to a stabilized direct current supply, to a measuring system and to a visual display device.

4,368,423

APPARATUS FOR DETERMINING CELL MEMBRANE DIELECTRIC BREAKDOWN

Robert P. Liburdy, 54 Pomeroy Ave., Pittsfield, Mass. 01201

Filed Jan. 13, 1981, Ser. No. 224,781
Int. Cl.³ G01N *27/04*
U.S. Cl. 324—65 R **9 Claims**



1. An apparatus for determining cell membrane dielectric breakdown comprising means for containing an electrolyte therein, an electric field exposure tube, means for supporting said electric field exposure tube within said electrolyte containing means, said exposure tube having a port of predetermined size adjacent one end thereof and an opening adjacent the other end thereof, means for containing and feeding a multitude of cells into said port, said predetermined size of said port being larger than the diameter of each of said cells, means for supporting said cell containing and feeding means within said electrolyte containing means adjacent said exposure tube, means operably connected to said opening at said other end of said exposure tube for continuously drawing said electrolyte and said cells through said port of said exposure tube at a preselected rate, mean operably associated with said port in said exposure tube for establishing a DC electric field across said port in said exposure tube, said means for establishing said DC electric field including a variable voltage source and means for determining the voltage across said port in said exposure tube whereby said cells which are drawn through said port act as a resistance thereby causing a voltage increase to occur, and means operably connected to said voltage determining means for utilizing said voltage increase in order to determine cell membrane dielectric breakdown.

4,368,424

MUTUAL INDUCTANCE CURRENT TRANSDUCER FOR AC ELECTRIC ENERGY METERS

Robert C. Miller, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 923,619, Jul. 11, 1978, abandoned. This application May 13, 1980, Ser. No. 149,356
Int. Cl.³ G01R *21/06, 15/10*; H01F *27/24*
U.S. Cl. 324—142 **3 Claims**

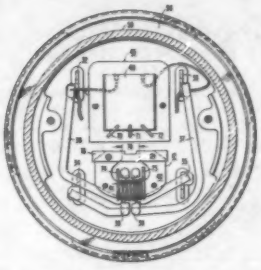
1. An AC electric energy meter comprising:

an electronic measuring circuit processing analog signals responsive to the line current and the line voltage components of an alternating current electric energy quantity to be measured for producing electronic signals representative of quantized amounts of electric energy;

means for producing an analog signal responsive to said line voltage component; and

current sensing transducer means for producing an output signal proportional to said line current component, said current sensing transducer means including conductor means for series connection with said line current compo-

nent, said conductor means having a primary winding portion for producing magnetic flux responsive to variations of said line current component; said transducer means further including a secondary winding; said transducer means still further including a magnetic core made of a soft magnetic material having said primary winding portion and said secondary winding disposed about said magnetic core in an inductively coupled relationship, said magnetic core further having opposite ends separated by a space equivalent to a predetermined air gap so that said magnetic core and the space between the ends thereof couple said magnetic flux with said secondary winding for having an electromotive force generated therein proportional to the time derivative of said magnetic flux, and said



secondary winding having a pair of output conductors for producing a current responsive analog signal having a voltage proportional to the time derivative of the line current component for connection to a high impedance low level signal input circuit of said electronic measuring circuit;

said current sensing transducer means including magnetically saturable shunt bar members which extend from one to the other of said opposite ends of said magnetic core for partially shunting said magnetic flux across said core space and being operable in a substantially unsaturated condition only below a predetermined low level of said magnetic flux to provide compensation for magnetic flux in said core at low levels of input current to said transducer means.

4,368,425

SYSTEM FOR AND METHOD OF TESTING TRANSISTORS

Robert W. Adams, Medford, Mass., assignor to DBX, Inc., Newton, Mass.

Filed Nov. 24, 1980, Ser. No. 209,894
Int. Cl.³ G01R *31/22*
U.S. Cl. 324—158 T **10 Claims**

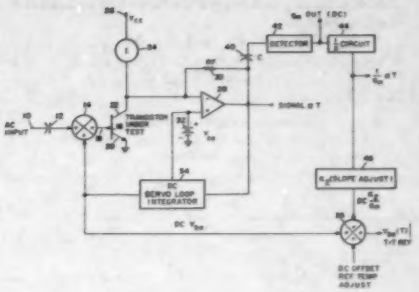
1. A system for testing a transistor for its V_{be}-I_c characteristics independent of temperature, said system comprising

means for generating a first signal which varies with temperature in accordance with the base-to-emitter voltage of said transistor as a function of temperature;

means for generating a second signal which varies with temperature in accordance with the transconductance gain of said transistor as a function of temperature;

means for modifying at least one of said signals so that as modified said first and second signals vary with temperature in a substantially equal and opposite manner to one another; and

means for adding said first and second signals as modified so as to provide an output signal representative of the V_{be}-I_c



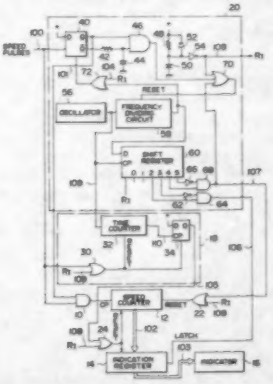
characteristics of said transistor independent of temperature.

4,368,426

DIGITAL INDICATION TYPE SPEEDOMETER

Kunihisa Hayashi, and Masakazu Moriyama, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 22, 1980, Ser. No. 218,500
Claims priority, application Japan, Dec. 28, 1979, 54-170608; Dec. 28, 1979, 54-170609
Int. Cl.³ G01P *3/48*
U.S. Cl. 324—161 **7 Claims**



1. A digital indication type speedometer comprising;

a speed counter for counting speed pulses emitted in proportion to a vehicle speed for a given gate time,

an indication register for latching a value to be indicated commensurate to an output from said speed counter,

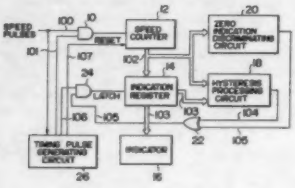
an indicator for indicating the value latched in said indication register, and

a zero indication discriminating circuit for forcibly setting the value latched in said indication register to zero when our emitting interval of the speed pulses exceeds a predetermined period of time.

4,368,427
DIGITAL INDICATION TYPE SPEEDOMETER

Kunihisa Hayashi, and Masakazu Moriyama, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 22, 1980, Ser. No. 218,834
Claims priority, application Japan, Dec. 28, 1979, 54-170606
Int. Cl.³ G01P 3/48
U.S. Cl. 324—161 10 Claims

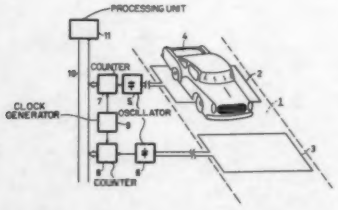


1. A digital indication type speedometer comprising:
a speed counter for counting speed pulses emitted in proportion to a vehicle speed for a given gate time;
an indication register for latching a value to be indicated commensurate to an output from said speed counter;
an indicator for indicating the value latched in said indication register; and
a hysteresis processing circuit for rewriting the value latched in said indication register in accordance with an output of said speed counter only when a difference between the output of said speed counter and the value latched in said indication register is not within tolerance limit upon comparison therebetween.

4,368,428
METHOD AND ARRANGEMENT FOR DETERMINING THE VELOCITY OF A VEHICLE

Marcellinus F. H. Dijkman, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 4, 1980, Ser. No. 175,108
Claims priority, application Netherlands, Aug. 9, 1979, 7906087
Int. Cl.³ G01P 3/66
U.S. Cl. 324—178 8 Claims

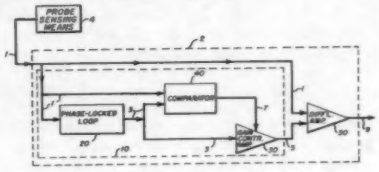


1. A method of determining the velocity of a vehicle by means of a vehicle detection system including first and second vehicle presence detectors arranged at a predetermined distance from one another in the travelling direction of the vehicle wherein each detector produces a measuring value which varies in dependence on the position of the vehicle relative to the detector, the method comprising, for each detector when a vehicle passes
determining a first measuring value measured over a first measuring time interval in which the measuring value exceeds a response threshold;
determining a second measuring value measured over a second measuring time interval in which the measuring value is below the response threshold, the second measuring time interval having been shifted a predetermined period of time relative to the first measuring time interval;
determining by interpolation the instant in a measuring time interval at which each detector is activated; and
computing the velocity of the vehicle using the predetermined distance between the two detectors and the time difference determined between the two instants in the interpolation step.

4,368,429
METHOD AND APPARATUS FOR SUPPRESSING NOISE DURING NONDESTRUCTIVE EDDY CURRENT TESTING

Thomas D. Jamison, Fort Oglethorpe, Ga., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed May 15, 1980, Ser. No. 149,828
Int. Cl.³ G01N 27/90; G01R 33/12; H04B 15/00
U.S. Cl. 324—225 6 Claims

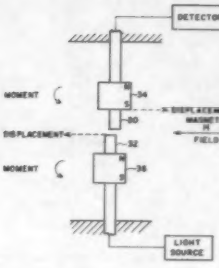


1. An apparatus for inspecting metallic workpieces comprising:
a. sensing means for detecting a defect in the metallic workpiece and for generating a signal representative of the defect;
b. a phase-locked loop for receiving the signal generated by said sensing means and for producing as an output a signal synchronized in phase and frequency with said reoccurring noise present in the received signal;
c. a gain controlled amplifier for receiving the output signal of said phase-locked loop for producing as an output an amplified reproduction of the output signal of said phase-locked loop, the gain of said amplifier being varied in response to an error voltage indicative of the amplitude differential between the output signal of said phase-locked loop and the signal generated by said sensing means;
d. a comparator for comparing the output signal of said phase-locked loop to the signal generated by said sensing means for producing as an output an error voltage indicative of the amplitude differential between the output signal of said phase-locked loop and the signal generated by said sensing means, said comparator having a first input port for receiving the signal generated by said sensing means, a second input port for receiving the output signal of said phase-locked loop and an output port at which the error voltage is presented; and
e. a differential amplifier for subtracting the output error voltage signal of said gain controlled amplifier from the signal generated by said sensing means and amplifying the difference therebetween, thereby producing a filtered defect signal, said differential amplifier having a first input port for receiving the signal from said sensing means, a second input port for receiving the output error voltage from said gain controlled amplifier and an output port at which the filtered defect signal is presented.

4,368,430
FIBER OPTIC MAGNETIC SENSORS

John C. Dale, Bedford; Glen A. Rines, Brookline, both of N.H., and Harrison W. Fuller, Lexington, Mass., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Aug. 18, 1980, Ser. No. 179,346
Int. Cl.³ G01R 33/032, 33/038
U.S. Cl. 324—244 6 Claims

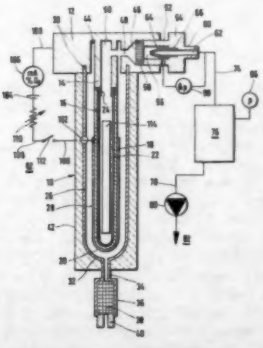


1. A magnetic sensor, comprising:
a first optical fiber, said first optical fiber being arranged as a cantilevered beam, and including a first dipolar magnet mounted on said cantilevered first optical fiber;
a second optical fiber spaced from said first optical fiber so as to produce a gap between the ends thereof, said second optical fiber being arranged as a cantilevered beam; and
a second dipolar magnet mounted on said cantilevered second optical fiber such that the optical coupling between said optical fibers varies proportionally to fluctuations of a component of the magnetic field substantially orthogonal to the longitudinal axes of said cantilevered beams which causes fluctuating magnetic torque on said magnets.

4,368,431
ELECTROCHEMICAL MEASURING DEVICE FOR DETERMINING THE OXYGEN CONTENT IN GASES

Franz-Josef Rohr, Absteinach, and Rudolf Krapf, Leimen, both of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie Aktiengesellschaft, Mannhein-Käfertal, Fed. Rep. of Germany

Filed Nov. 13, 1980, Ser. No. 206,380
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1979, 2945698
Int. Cl.³ G01N 27/00
U.S. Cl. 324—464 19 Claims

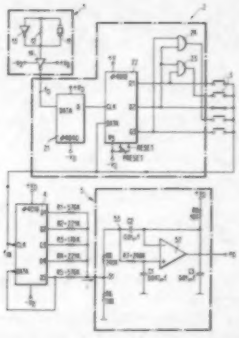


1. Electrochemical measuring device for determining oxygen content in gases with approximately constant pressure, especially in combustion exhaust gases, comprising a housing with a gas inlet and a gas outlet for passage of a constant pressure gas stream therethrough, an ion-conducting solid electrolyte with a first and a second electrode disposed in the housing to provide a passageway therein for contact of said constant pressure gas stream with said first electrode for measurement of the oxygen content in the gas, said first and second electrodes connected by electrical conductors to an electric current source and a current measuring device, the combination therewith of a constriction in the path of the constant pressure gas stream, said constriction having a passageway of cross sectional area to pass the gas stream at the velocity of sound under the condition of critical pressure ratio dependent on a ratio of the pressure at the outflow side of the constriction to the pressure at the inflow side of the constriction which brings about sound velocity of the gas stream.

4,368,432
SINE WAVE GENERATOR FOR DIFFERENT FREQUENCIES

Allan Levy, Delray Beach, Fla., assignor to Siemens Corporation, Iselin, N.J.

Filed Nov. 12, 1980, Ser. No. 206,256
Int. Cl.³ H03B 19/00; H03K 3/80, 13/02
U.S. Cl. 328—14 10 Claims



1. A sine wave generator composed of digital circuits comprising:
(a) a high frequency oscillator for generating a square wave output pulse train;
(b) a frequency divider circuit being composed of
a first ripple carry binary counter having a data input and an output, and being symmetrically arranged between positive and negative supply voltage, said data input being connected to said output of said square wave oscillator; and
a second shift register including Johnson-counter stages being symmetrically arranged between positive and negative supply voltage, having a data input, a clock input connected to said output of said binary counter and having parallel outputs, one of said parallel outputs forming an output of said frequency divider network;
(c) a binary shift register being designed as a divide-by-n counter and having m counter stages, wherein m=n/2, said shift register having a clock input connected to said output of said frequency divider circuit and having m outputs each associated with a respective one of said counter stages;
(d) a resistor network being composed of m rated resistors having first and second taps and being arranged in parallel with said first taps connected together, and each of said second taps being connected to a respective one of said outputs of said shift register, wherein the rating of said

resistors is such that an k-th resistor associated with the k-th output of said shift register has the value

$$R_k = \frac{R}{\sin \frac{\pi}{m}(k - C)}$$

and wherein

k is a positive integer from 1 through m;

R is a reference resistance value;

C=½ if m is an odd number; and

C=0 if m is an even number; and

(e) a low-pass filter network having an input and an output, said network input being connected to said commonly connected first taps of said resistors and said network output forming the sine wave signal output of said generator.

4,368,433

SIGNAL CONVERTER CIRCUIT

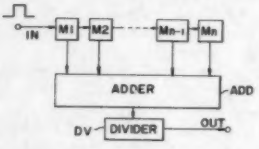
Ryoji Imazeki; Etsuo Yamazaki, and Takao Sasaki, all of Hachioji, Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Aug. 8, 1980, Ser. No. 176,336

Claims priority, application Japan, Aug. 25, 1979, 54-108384

Int. Cl.³ H03K *3/86, 6/00*

U.S. Cl. 328—30 **6 Claims**



1. A signal converter circuit for receiving clock pulses and for converting an input signal, comprising:

n memory elements for sequentially having the input signal written therein in synchrony with the clock pulses, wherein n is an integer greater than 1;

an adder, operatively connected to said n memory elements, for adding together the contents of said n memory elements and for providing, as an output, an added result; and

a divider, operatively connected to said adder, for dividing the added result by n.

4,368,434

PROGRAMMABLE DIGITAL DETECTOR FOR THE DEMODULATION OF ANGLE MODULATED ELECTRICAL SIGNALS

Charles K. Miller, Concord, and William D. Northam, Cambridge, both of Mass., assignors to Codex Corporation, Mansfield, Mass.

Filed Sep. 18, 1980, Ser. No. 188,547

Int. Cl.³ H03D *3/02;* **H04L** *27/14*

U.S. Cl. 329—50 **17 Claims**

1. Demodulator circuitry for angle modulated carrier signals, comprising

a discriminator for forming the respective products of successive samples of said signals with earlier such samples, to provide an output representative of said signals, comprising

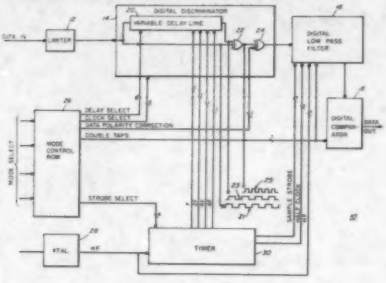
a delay line for storing said samples,

means for shifting successive samples through said delay line,

means for determining the effective length of said delay line, and

multiplying means responsive to said delay line for multiplying current samples by earlier samples stored in and shifted through said delay line, to produce said output, and

programmable control circuitry for providing to said discriminator a first control signal to selectively activate said means for determining, thereby selecting said effective



length, and a second control signal to selectively activate said means for shifting to thereby select the rate at which samples are shifted through said delay line, said control signals together thereby determining the effective time delay in said discriminator.

4,368,435

SYSTEM FOR MAXIMUM EFFICIENT TRANSFER OF MODULATED AUDIO FREQUENCY ENERGY

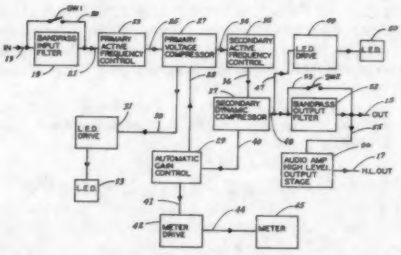
Graham P. Bloy, Bangkok, Thailand, assignor to Alfred F. Eberhardt and Marvin Coghill, both of Bangkok, Thailand, a part interest to each

PCT No. PCT/US80/01331, § 371 Date Oct. 3, 1980, § 102(e) Date Oct. 3, 1980, PCT Pub. No. WO82/01290, PCT Pub. Date Apr. 15, 1982

PCT Filed Oct. 3, 1980, Ser. No. 265,990

Int. Cl.³ H03G *7/06*

U.S. Cl. 330—133 **24 Claims**



1. An audio processing system comprising audio signal input means for receiving an audio signal to be processed, and audio signal output means for providing a processed audio signal for further use, and characterized by primary frequency control means for selectively controlling the relative level of said audio input signal to be processed within a plurality of different audio frequency bands thereby to provide a first frequency controlled signal, a primary dynamic compressor including a controllable gain cell, the gain of which varies as a function of the signal magnitude thereto for dynamically compressing the first frequency controlled signal thereby to provide a primarily compressed audio signal, secondary frequency control means for selectively controlling the relative level of said primarily compressed signal within a plurality of different audio frequency bands, thereby to provide a frequency controlled primarily compressed signal, a secondary dynamic compressor

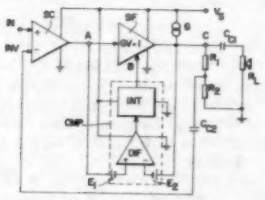
including a controllable gain cell, the gain of which varies as a function of the signal magnitude thereto for dynamically compressing said frequency controlled primarily compressed signal, thereby providing a secondarily compressed signal and a time-delaying, gain-limiting feedback circuit means interconnected between said primary and secondary dynamic compressors for limiting the dynamic compressing of said input signal by said primary dynamic compressor as a time-delayed function of increase in the level of said secondarily compressed signal, said audio signal output means providing said secondarily compressed signal as said processed audio signal.

4,368,436

OVERLOAD PROTECTION DEVICE FOR POWER OUTPUT CIRCUITS

Sergio Palara, Milan, and Silvano Tintori, Bergamo, both of Italy, assignors to SGS-ATES Componenti Elettronici S.p.A., Milan, Italy

Filed May 28, 1980, Ser. No. 154,082
Claims priority, application Italy, Jun. 4, 1979, 23235 A/79
Int. Cl.³ H03F *21/00*
U.S. Cl. 330—207 P **12 Claims**



1. An overload protection device for a power output circuit, said power output circuit having a voltage gain substantially equal to one under normal load conditions and having an input terminal, an output terminal, and an inhibit terminal, said overload protection device comprising:

a threshold comparator having first and second input terminals respectively adapted to be connected to said input and output terminals of said power output circuit and having an output terminal adapted to be connected to said inhibit terminal of said power output circuit;

wherein the threshold of said comparator is arranged such that said comparator generates a signal at its output terminal for inhibiting the operation of said power output circuit and reducing its power dissipation to a value substantially equal to zero whenever the difference between the voltage at said input terminal and the voltage at said output terminal of said power output circuit exceeds a specified value, whereby the power output circuit is protected from output overloads;

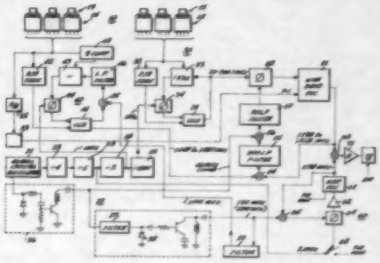
further comprising a restoring means for automatically restoring the operation of said power output circuit subsequent to its being inhibited by said comparator, said restoring means comprising a DC load adapted to be connected to said output terminal of said power output circuit, and a current generator connected to said DC load, wherein the magnitude of the current generated by said current generator is sufficient to cause a voltage drop across said DC load which is greater than said specified threshold value of said comparator.

4,368,437

WIDE FREQUENCY RANGE SIGNAL GENERATOR INCLUDING PLURAL PHASE LOCKED LOOPS

Anthony W. Reuter, Indianapolis, Ind., assignor to Wavetek Indiana, Inc., Beech Grove, Ind.

Continuation of Ser. No. 774,812, Mar. 7, 1977, abandoned, which is a continuation of Ser. No. 561,332, Mar. 24, 1975, abandoned. This application Jul. 7, 1978, Ser. No. 922,764
Int. Cl.³ H03L *7/22*
U.S. Cl. 331—2 **29 Claims**



17. A signal generator for providing a signal having a particular frequency within a large band, comprising:

at least a pair of oscillating means each providing a signal having a frequency selectable from an individual plurality of discrete frequencies within an individual band having a width different from the widths of the other individual bands, each oscillating means including feedback means for controlling the production of the selectable frequency of the signal within each band;

input selection means having adjustable characteristics for selecting a frequency within the large band in accordance with such adjustments and being operatively coupled to the oscillating means of the pair for controlling the selection in each of the individual oscillating means of the discrete frequency within the individual band;

circuit means for providing a plurality of signals constituting a particular fundamental frequency and harmonics of the fundamental frequency and defining a comb within the large band;

additional oscillating means responsive to the input selection means for providing signals having a particular frequency within the large band in accordance with the adjustments of the input selection means;

the additional oscillating means including feedback means for controlling the production of the selectable frequency within the large band; and

signal combining means for mixing the signals from at least the pair of the oscillating means and the additional oscillating means and the signals from the circuit means in particular relationships defining the feedback means for the additional oscillating means to obtain a signal having the particular frequency from the additional oscillating means,

the signal combining means including low pass filter means for providing for the selection of an individual one of the frequencies in the comb in accordance with the adjustments in the input selection means.

4,368,438

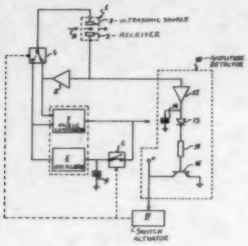
SYSTEM FOR DETECTING SHEET-LIKE OBJECTS

Jan B. Stienstra, Venlo, Netherlands, assignor to OCE-Nederland B.V., Venlo, Netherlands

Filed Jan. 26, 1981, Ser. No. 228,332
Int. Cl.³ H03L *7/08*; B65H *7/12*
U.S. Cl. 331—14 **5 Claims**

1. A method of detecting and distinguishing between superimposed and single sheet-like objects moving along a transport

path, which comprises passing ultrasonic vibrations through a gap across the transport path from an ultrasonic source to an ultrasonic receiver that produces a signal output representing characteristics of the vibrations received; when no sheet-like object is present in said gap connecting said source with said receiver in a feedback circuit whereby the vibrations in said gap acquire a certain natural frequency determined by then



existing characteristics of the elements of said circuit and tuning an oscillator to a frequency corresponding to that natural frequency; and when a sheet-like object is present in said gap applying to said source the tuned frequency of said oscillator and comparing the phase of the oscillator vibrations resulting at said receiver with the phase of the oscillator vibrations, thereby producing a signal representing the phase displacement effected by the object.

4,368,439

FREQUENCY SHIFT KEYING SYSTEM

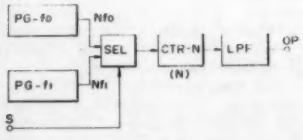
Kiyoshi Shibuya, Kawasaki, and Hitoshi Shirai, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 64,849, Aug. 8, 1979. This application Jun. 19, 1981, Ser. No. 275,293

Claims priority, application Japan, Aug. 24, 1978, 53-103007

Int. Cl.³ H04I *27/12*

U.S. Cl. 332—9 R **4 Claims**



1. A frequency shift keying system, for receiving an input code and for producing modulated output signals of different frequencies in dependence upon the state of the input code, comprising:

pulse source means for continuously providing, as an output pulse signals of frequencies respectively N times greater than the modulated output signals of different frequencies where N is an integer;

selector means, operatively connected to receive the input code and operatively connected to said pulse source means, for selectively outputting one of said pulse signals from said pulse source means in dependence upon the state of the input code;

a pulse counter, operatively connected to said selector means, for counting pulses from the output of said selector means and for providing a counter pulse signal at a frequency 1/N, said counter pulse signal having a duty ratio of 50%;

a low-pass filter, connected to said pulse counter, for converting said counter pulse signal into a sine wave having the same frequency as said counter pulse signal.

4,368,440

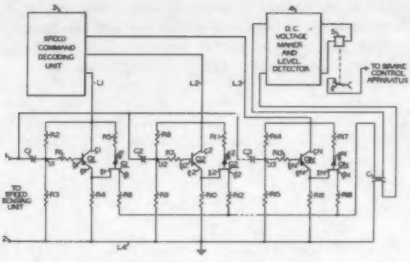
FAIL-SAFE LOW-PASS FILTERING CIRCUIT

John O. G. Darrow, Murrysville, Pa., assignor to American Standard Inc., Swissvale, Pa.

Filed Oct. 23, 1980, Ser. No. 199,779

Int. Cl.³ H03H *7/10*

U.S. Cl. 333—172 **10 Claims**



1. A vital circuit arrangement comprising, a source of a.c. signals having a variable frequency, a plurality of electronic gates having their inputs coupled to said source of a.c. signals, one of a plurality of electronic switches coupled to the output of an associated one of said plurality of electronic gates, and a variable low-pass filter network having an upper signal frequency limit which is determined by which of said associate electronic gates and switches is rendered conductive by supplying a d.c. voltage to said associated gates and switches.

4,368,441

KEY ASSEMBLY

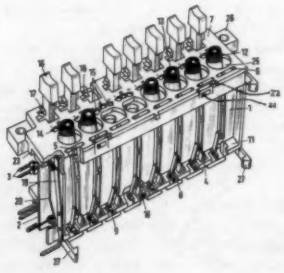
Karl-Heinz Bauer, Bad Neustadt/Saale; Gerold Eckert, Brendlorenzen, and Reinhold Wolf, Bad Naustadt/Saale, all of Fed. Rep. of Germany, assignors to Pren Elektrofeinmechanische Wereke Jakob Preh Nachf. GmbH & Co., Neustadt, Fed. Rep. of Germany

Filed Apr. 16, 1981, Ser. No. 254,635

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1980, 3015292

Int. Cl.³ H03J *1/02*

U.S. Cl. 334—15 **8 Claims**



1. A key assembly for receivers of communication systems, especially radio and television receivers, comprising a casing, keys adapted for mutual release by means of a sliding, spring-loaded locking plate for switching in storable, selectively adjustable electrical values of channel memories consisting of a plurality of voltage dividers for variable capacitance diode tuning, rotary and slidable press buttons associated with the respective keys for channel tuning and optionally for selecting a frequency range, which is adjustable in a preferably pressed position of the rotary press button being different from the tuning position by turning into various locking angular posi-

tions, as well as a unitary channel and frequency range indicator scale, characterized in that said indicator scale and the locking plate (7) for the keys (16) are one and the same.

4,368,442

MERCURY SWITCH

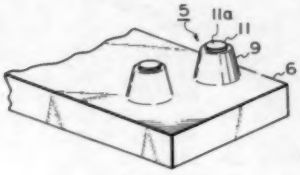
Kohmei Yamaguchi, Yokohama; Kazuo Kobayashi, and Takeo Furukawa, both of Suzaka, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 8, 1980, Ser. No. 214,206

Claims priority, application Japan, Dec. 11, 1979, 54-170417[U]

Int. Cl.³ H01H *29/04*

U.S. Cl. 335—57 **11 Claims**



1. A mercury switch in which a magnetic armature and a magnetic pole having a fixed contact are inserted in a glass tube, mercury is introduced into the glass tube to wet the contact point, and both ends of the glass tube are sealed, the improvement wherein a recessed portion is formed in a portion of the magnetic pole, a contact material is adhered into the recessed portion to form a fixed contact having an upper exposed contact surface and side portions substantially buried in said recessed portion, and a film of metal oxide which will be poorly wetted with mercury is formed on the surface of the magnetic pole except on the surface of the fixed contact.

4,368,443

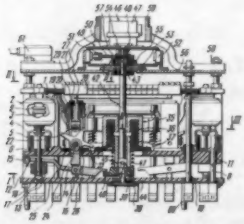
POWER ELECTRIC CIRCUIT SWITCHING DEVICE

Vitaly I. Koshman, bulvar Shevchenko, 123, kv. 25; Vladimir F. Petrichenko, ulitsa Prozhektornaya, 6, kv. 44; Boris S. Gnilitsky, ulitsa Artema, 116, kv. 21; Vyacheslav D. Oborotov, ulitsa Marii Ulyanovoi, 65, kv. 53; Alexandr M. Ubiiko, bulvar Shevchenko, 115, kv. 30, and Leonid P. Abara, ulitsa Nizhnekurganskaya, 3, kv. 192, all of Donetsk, U.S.S.R.

Filed Apr. 1, 1981, Ser. No. 249,840

Int. Cl.³ H01H *51/08*

U.S. Cl. 335—138 **7 Claims**



1. A power electric circuit switching device comprising;

a plurality of main contacts composed of stationary contact members arranged in a circle, and movable contact members;

a plurality of first and second auxiliary contacts adapted for switching local control circuits of the device;

mechanisms of separately operating main and auxiliary contacts, which mechanisms being provided with contact fixing devices for fixing said main and first auxiliary contacts;

a rotational electromechanical drive having a driving shaft, adapted to rotate said driving shaft through a predetermined angle;

an electromagnetic drive having an electromagnet for closing said main and first auxiliary contacts, electromagnets for opening said main and auxiliary contacts, and an actuating mechanism;

said actuating mechanism of said electromagnetic drive, comprising an armature of said electromagnet for closing said main and first auxiliary contacts, said armature being formed hollow and mounted on said driving shaft for movement along the axis of said driving shaft and rotation therewith;

plurality of armatures of said electromagnets for opening said main and auxiliary contacts, which armatures reciprocate to open said main and auxiliary contacts, the number of said armatures corresponds to the number of said contact fixing devices of said main and first auxiliary contacts, each of said plurality of said armatures being cnnected with one of said contact fixing devices for opening respective contact;

a contactor secured on said armature of the electromagnet for closing said main and first auxiliary contacts, said contactor being provided with at least one projection to actuate said main and auxiliary contacts.

4,368,444

LOW-VOLTAGE PROTECTIVE CIRCUIT BREAKER WITH LOCKING LEVER

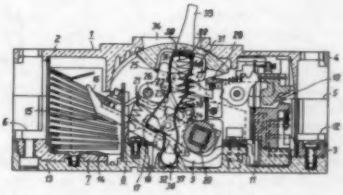
Bernhard Preuss, and Werner Koziolek, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 31, 1981, Ser. No. 297,568

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1980, 8023509[U]

Int. Cl.³ H01H *9/20*

U.S. Cl. 335—166 **5 Claims**



1. In a circuit breaker comprising a housing, at least one stationary contact and one movable contact, a control shaft, a carrier mounted on the control shaft and connected to the movable contact to move the same relative to the fixed contact, a handle, an actuating lever connected to the handle to be controlled thereby, a pressure spring connected to the carrier and to the movable contact to exert pressure on the movable contact to force it toward the fixed contact, a drive spring connected to the actuating lever, and a toggle lever system engaging the carrier, and including a toggle joint pin, the invention comprising:

a locking lever, one end of the locking lever engaging the handle;

pivotal support means for the locking lever;

a first working surface of the locking lever;

an abutting surface on the carrier opposite the working surface and spaced therefrom by a distance less than the distance the working surface moves when the operating handle moves from its "on" position to its "off" position: and

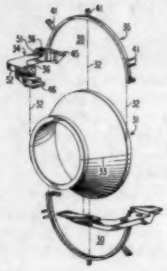
a second working surface on the locking lever opposite the toggle joint pin of the toggle lever system to engage the toggle joint pin at an intermediate position in the path of movement of the locking lever.

4,368,445

TELEVISION DEFLECTION YOKE

Robert W. Shisler, East Petersburg, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 8, 1981, Ser. No. 223,496
Int. Cl.³ H01F *5/02*
U.S. Cl. 335—210 **5 Claims**



1. A deflection yoke for use in a television receiver, comprising:

a magnetically permeable core having two separable core halves;

a pair of horizontal deflection coils;

a pair of yoke interlock members, one of said members mounted to each of said core halves in predetermined positional relationship to the other of said members, each of said members comprising:

a plurality of core engaging surfaces to accurately fix the position of said interlock member with respect to said core half;

a plurality of horizontal deflection coil engaging surfaces to accurately fix the position of one of said horizontal deflection coils with respect to said interlock member; and

a pair of vertical deflection coils, each of said vertical coils toroidally-wound on a respective core half in predetermined positional relationship relative to said interlock members, whereby each of said horizontal deflection coils is held in predetermined positional relationship with respect to the other of said horizontal deflection coils, each of said vertical deflection coils is held in predetermined positional relationship with respect to the other of said vertical deflection coils, whereby said horizontal deflection coils are held in predetermined positional relationship with respect to said vertical deflection coils.

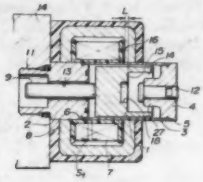
4,368,446

SOLENOID

Kazuo Araki, Tateyama, and Ikuo Tochizawa, Takaoka, both of Japan, assignors to Kabushiki Kaisha Fujikoshi, Toyama, Japan

Filed Oct. 23, 1979, Ser. No. 87,485
Claims priority, application Japan, Oct. 26, 1978, 53-146420[U]; Oct. 26, 1978, 53-146421[U]
Int. Cl.³ H01F *7/08*; H02K *33/02*
U.S. Cl. 335—258 **2 Claims**

1. An AC or DC solenoid of the armature-in-tube type comprising a stationary core; an armature; an armature tube secured to said stationary core to form an oil-tight seal and enclosing said armature, said armature being axially slidable within said armature tube; and a yoke and a coil for energizing said stationary core and said armature, said solenoid having means provided at an end of said armature for reducing the effective cross-sectional area of the magnetic path extending through said yoke and said armature when the distance between said armature and said stationary core is less than a predetermined fraction of the full stroke of movement of said armature, said means for reducing the effective cross-sectional



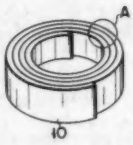
area of said magnetic path comprising a recess formed in an end surface of said armature remote from said stationary core, said recess having a bottom surface which lies in the plane of an inner wall of said yoke when said distance between said armature and said stationary core is equal to said predetermined fraction.

4,368,447

ROLLED CORE

Koichiro Inomata, Yokohama, and Michio Hasegawa, Machida, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 3, 1981, Ser. No. 250,549
Claims priority, application Japan, Apr. 30, 1980, 55-56176
Int. Cl.³ H01F *21/02*
U.S. Cl. 336—20 **3 Claims**



1. A rolled core formed by winding a thin body of an amorphous magnetic alloy having positive magnetostriction characteristics, characterized in that said thin body is wound with the surface of smaller surface coarseness of said thin body facing inward.

4,368,448

WATER COOLING APPARATUS FOR ELECTRIC CIRCUIT ELEMENTS

Shigeo Kobayashi; Kazuo Kobayashi, and Eiki Takahashi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 3, 1980, Ser. No. 166,702
Claims priority, application Japan, Jul. 6, 1979, 54-84994
Int. Cl.³ H01F *27/10*
U.S. Cl. 336—61 **17 Claims**

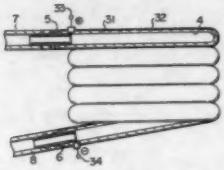
1. A water cooling apparatus and an electric circuit element, comprising a waterway for allowing cooling water to pass therethrough, said waterway including:

(a) an inner waterway portion so arranged as to directly cool the electric circuit element and defined by a metal which is apt to be dissolved in the cooling water at high electric field intensity;

(b) an outer waterway portion connected to said inner waterway portion; and

(c) a connecting waterway portion connecting said inner waterway portion with said outer waterway portion, said

connecting waterway portion being formed in metal connector means, at least an inner surface of a connecting end



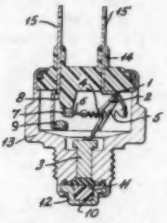
portion of said connector means being made of an alloy containing Fe, Ni and Cr as its main component.

4,368,449

CONTACT MECHANISM FOR TEMPERATURE SWITCH USING THERMAL EXPANSION MEMBER

Kazumi Ubukata, Daiichi-Miyazakiso 103, 395-2 Ushinuma, Tokorozawashi, Saitamaken, Japan

Filed Mar. 6, 1981, Ser. No. 241,212
Claims priority, application Japan, Oct. 25, 1980, 55/149742
Int. Cl.³ H01H *37/46*
U.S. Cl. 337—313 **1 Claim**



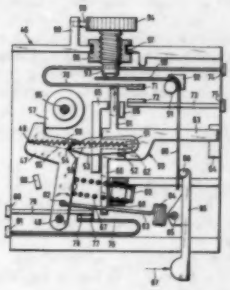
1. A thermally operated temperature switch comprising;
a switch case;
at least one terminal member mounted in the case and insulated therefrom, the terminal member having a first fulcrum point thereon and a stationary end displaced away from the first fulcrum point;
a plate having opposite ends, a center, and a second fulcrum point slightly displaced from the center, one of the ends of the plate being positioned in the first fulcrum point and pivotable therein;
a thermally expandable member mounted in the case,
a piston movably mounted in the case and operably associated with the thermally expandable member, the other end of the plate resting on the piston and being movable thereby;
a stationary contact in the case;
a movable member having opposite ends and a middle, one of the ends being positioned in the second fulcrum point and pivotable therein;
a movable contact on the other end of the movable member; and
a coil spring biased between the middle of the movable member and the stationary end of the at least one terminal member;
whereby when the thermally expandable member changes size, thereby moving the piston, the plate pivots in the first fulcrum point moving the second fulcrum point whereby the movable member is instantly shifted by the biasing of the coil spring as second fulcrum point passes a dead point thereby making or breaking contact between the movable contact and the stationary contact, further movement of the piston further moving the plate and causing the movable contact to slide on its place of resting.

4,368,450

CONTACT ARRANGEMENT

Reiner Lädorf, Gummersbach, Fed. Rep. of Germany, assignor to Starkstrom Gummersbach GmbH, Marienheide, Fed. Rep. of Germany

Filed Nov. 16, 1981, Ser. No. 321,894
Claims priority, application European Pat. Off., Nov. 28, 1980, 801074485
Int. Cl.³ H01H *37/52*
U.S. Cl. 337—363 **11 Claims**



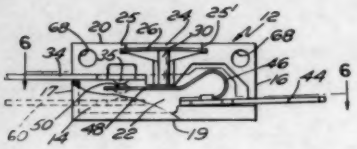
1. A contact arrangement comprising support means, a first stationary contact member mounted on said support means; a second stationary contact member mounted on said support means spaced in one direction from said first stationary contact member; a first movable contact member arranged adjacent said first stationary contact member; a second movable contact member arranged adjacent said second stationary contact member; elongated striker means guided for reciprocating movement in a direction of its elongation to move during its reciprocation in one direction one of the movable contact members in engagement with the stationary contact member adjacent thereto and the other movable contact member out of engagement with the stationary contact member adjacent thereto, and vice versa; guide means provided on said striker means extending transverse to the reciprocation direction of said striker means; a movable guide body mounted in said guide means for movement in said transverse direction; and an angle lever transversely spaced from said striker means and having one arm pivotally mounted in the region of its free end on said support means and another arm extending transverse to said one arm and integrally joined to the latter by a knee; a link member carrying in the region of one end said movable guide body and articulately engaging with its other end said angle lever in the region of said knee; a tension spring connected at one end to said movable guide body and at the other end to said other arm of said angle lever; a second guide body having two opposite faces extending in said transverse direction, said second guide body being mounted in stationary position on said support means and being coordinated with said movable guide body and said guide means thereof so that during movement of said striker means said movable guide body will first be moved in one direction along one of said opposite faces of said stationary guide body and then in an opposite direction along the other of said opposite faces of said stationary guide body.

4,368,451

THERMOSTATIC SWITCH

Henry C. Bucheister, 89 Wheeler Ave., Cranston, R.I. 02905

Filed Aug. 20, 1981, Ser. No. 294,787
Int. Cl.³ H01H 37/02
U.S. Cl. 337—380 4 Claims



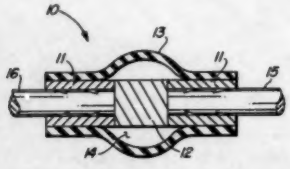
1. A thermally actuated switch comprising a one-piece molded housing member with a central cavity therein,
said housing having walls lying in planes normal to each other to define a container with a back wall, upstanding side walls and an open face opposite the back wall,
a first conductive contact member extending through at least one wall of said housing member and having an inner contact portion fixed with relation to the housing member,
a second conductive member extending through a wall of said housing member and having a movable inner contact portion positioned to engage said fixed contact portion,
said conductive members located in the cavity of said housing,
a pocket opening in a side wall of said housing,
a convex heat responsive element having its edges located in said pocket of said housing member, said pocket having an upper retaining lip defining a surface, and an opening to said central cavity,
a non-electrical conductive actuator extending from said element to said second conductor member through said opening to move said second member in response to thermal changes of said convex element, said actuator having constant length by reason of the fixed distance between the lip and the first conductive member which is fixed in the same one-piece housing,
and a cover to close the open portion of the cavity.

4,368,452

THERMAL PROTECTION OF ALUMINUM CONDUCTOR JUNCTIONS

Robert L. Kerr, Jr., 6532 W. Palm La., Phoenix, Ariz. 85035

Filed Jun. 22, 1981, Ser. No. 275,890
Int. Cl.³ H01H 37/76
U.S. Cl. 337—414 7 Claims



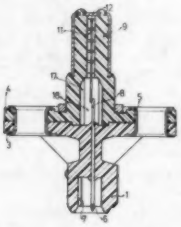
1. In an electrical connector having conduction means therethrough, an insulating envelope thereabout, and means for captivating the end of at least one exterior electrical conductor, the improvement comprising:
thermal linkage means coupled to said conduction means for reacting meltingly to thermal rather than current overloads to interrupt said conduction means through said electrical connector when a high resistance connection results between the end of said exterior conductor and said captivating means causing a localized, potentially dangerous high temperature rise; and
an expansion void to which said thermal linkage means moves in its molten state under the influence of gravity alone so that said conduction means remains interrupted.

4,368,453

RAPID ACTING GAS TEMPERATURE SENSOR

Werner Herden, Stuttgart; Hans-Martin Hochenberger, Nürtingen; Hans Neu, Vaihingen; Hans-Joachim Seidel, Waiblingen; Werner Pfander, Fellbach; Heiko Gruner, Gerlingen; Erich Zabler, Karlsruhe; Claus-Dietrich Pilch, Remchingen, and Karl-Otto Linn, Karlsruhe, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 3, 1980, Ser. No. 203,514
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1979, 2944487
Int. Cl.³ H01C 3/04
U.S. Cl. 338—25 7 Claims



1. Rapidly responsive temperature sensor for measuring the intake air temperature of an internal combustion engine capable of operating as a supercharged engine, comprising:
a thin wafer of insulating material (12);
a meander-shaped resistance path (13) applied to said insulating wafer (12) by a thin film technique and comprising multiple conducting segments formed essentially parallel to one another and having extended end portions (15, 16), and made of metallic resistive material;
a protective layer of a polymeric material selected from the group consisting of silicone and epoxy resins, covering said resistance path and said insulating wafer and protecting them against corrosion and abrasion;
means for supporting said wafer on the air intake duct of an engine in a manner allowing a flow of air past said wafer, and
conductors (6) each connected at one end (8) to one of said extended end portions (15, 16) of said resistance path for facilitating connection of an external circuit to said resistance path;
wherein the conducting segments of the resistance path (13) are each about 10 mm in length, substantially 50 μm in width and 0.2–0.6 μm thick, and
the insulating wafer is made of a ceramic material and is substantially 0.25 mm thick.

4,368,454

STEERING DEVICE WITH DISHED IMPACT PLATE FOR AUTOMOTIVE VEHICLES

Bernd Pilatzki, Wuelnerstr. 115, 5000 Cologne 41, Fed. Rep. of Germany

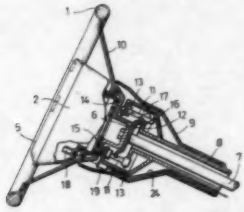
PCT No. PCT/EP79/00075, § 371 Date May 27, 1980, § 102(e) Date May 13, 1980, PCT Pub. No. WO80/00683, PCT Pub. Date Apr. 17, 1980

PCT Filed Sep. 26, 1979, Ser. No. 194,246

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1978, 2842020

Int. Cl.³ G08G 1/00; G05G 11/00

U.S. Cl. 340—22 15 Claims



1. A steering device for a vehicle, comprising a steering wheel supported by a steering shaft; a shock proof dished plate carrying operating controls, indicating instruments or the like on an outer surface thereof facing a driver of the vehicle, the steering wheel having at least one spoke being rigidly connected to said steering shaft; a construction element immovably attached to the vehicle, said dished plate being formed with passages; and at least two displaceable coupling elements adapted to couple said dished plate to said construction element so that when one of said coupling elements is in its coupling position by engaging thereof in one of said passages the other coupling element is allowed to come out of its coupling position by disengaging thereof out of another of said passages to thereby prevent said dished plate from rotating with said steering wheel.

4,368,455

HEAVY DUTY EMERGENCY POWER PACK FOR VEHICLE TRAILER

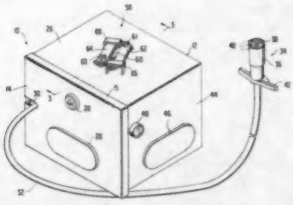
Roger O. Menard, P.O. Box 1216, Clearfield, Pa. 16830

Filed Feb. 26, 1980, Ser. No. 124,742

The portion of the term of this patent subsequent to Feb. 27, 1996, has been disclaimed.

Int. Cl.³ B60Q 1/26; H01M 2/10

U.S. Cl. 340—74 24 Claims



23. Apparatus, which comprises:

means for supporting a battery which comprises an enclosed case having a movable lid, means for locking said lid to secure the contents of said case, a handle extending from said case, means extending from said case for securing said case to a trailer, means operatively associated with said securing means for locking said case to said trailer, and an adapter plug extending from said case and adapted to be connected to a mating socket on said trailer.

4,368,456

APPARATUS FOR CORRELATING SUCCESSIVE IMAGES OF A SCENE

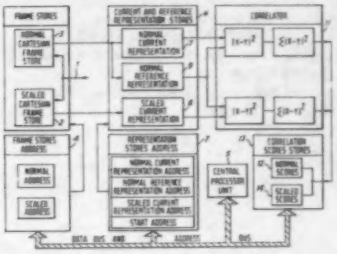
David P. S. Forse, Harrow; Richard W. Franks; Nigel T. Bamford, both of London; Philip V. Coates, Sunbury-on-Thames, and Jan C. Thorscov, Uxbridge, all of England, assignors to EMI Limited, Hayes, England

Filed Jan. 9, 1980, Ser. No. 116,030

Claims priority, application United Kingdom, Jan. 9, 1979, 7900664

Int. Cl.³ G06K 9/00

U.S. Cl. 340—146.3 Q 6 Claims



1. A correlation apparatus comprising,

storage means containing respective storage location for storing data relating to a first succession of representations of a scene, a second succession of representations of the scene corresponding to the first succession of representations but having a scale less than that of the first succession of representations, and a reference representation of at least a portion of the scene having a scale greater than at least the initial representation of the second succession of representations,

first comparing means for comparing the reference representation with the first succession of representations to form respective first comparison signals indicative of the degree of similarity between compared representations,

second comparing means for comparing the reference representation with the second succession of representations to form further respective comparison signals indicative of the degree of similarity between compared representations,

further means for comparing the first comparison and further comparison signals, and

control means for replacing the reference representation with a selected one of the first succession of representations in dependence on the comparison of the further comparison means.

4,368,457

ANALOG-TO-DIGITAL CONVERTER

Toshiro Tsukada, Kokubunji; Hisashi Tsuruoka, Hachioji, and Michio Hara, Kodaira, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed Mar. 20, 1978, Ser. No. 887,966

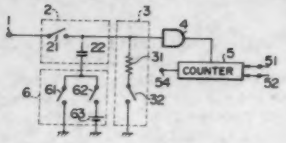
Claims priority, application Japan, Mar. 22, 1977, 52/30327

Int. Cl.³ H03K 13/20

U.S. Cl. 340—347 AD 11 Claims

1. An analog-to-digital converter comprising a storage means connected to an input terminal and storing a signal corresponding to the analog input signal, a discharging means connected to the output terminal of said storage means and discharging said stored signal, and a counter means for counting the number of clock pulses till the time at which the volt-

age at said output terminal of said storage means reaches a certain detection level during discharging; wherein



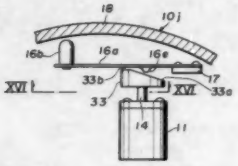
said analog-to-digital converter further comprises a constant DC bias voltage supply means connected in series with said storage means to shift the voltage at said output terminal of said storage means above said detection level.

4,368,458

MOTOR ACTUATED BELL

Tadashi Ishii, Tokyo, Japan, assignor to Kobishi Electric Co., Ltd., Tokyo, Japan

Filed Aug. 6, 1980, Ser. No. 175,775
Int. Cl.³ G08B *3/00*
U.S. Cl. 340—396 **3 Claims**



1. A motor actuated bell which comprises:
(a) a base;
(b) a gong mounted on said base;
(c) a motor mounted on said base within said gong and having a rotatable drive shaft extending in parallel relation to said base;
(d) a hammer means comprising (i) a hammer element for striking against the inner wall of said gong and (ii) a leaf spring fixedly secured at one end thereof to said base and extending in parallel spaced relation thereto, said leaf spring carrying said hammer element at the other end thereof; and
(e) a circular cam member operatively and fixedly connected to said motor drive shaft for rotation therewith about the axis of said shaft, said cam member having a cam surface for acting directly on said leaf spring for moving said hammer element toward and away from the inner wall of said gong, and said leaf spring being disposed perpendicular to the axis of said cam member.

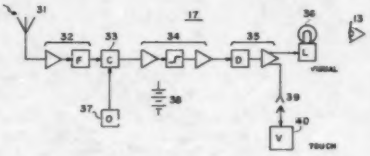
4,368,459

EDUCATIONAL APPARATUS AND METHOD FOR CONTROL OF DEAF INDIVIDUALS IN A MIXED TEACHING ENVIRONMENT

Robert Sapora, 825 Holiday La., Westminster, Md. 21157

Filed Dec. 16, 1980, Ser. No. 217,081
Int. Cl.³ G08B *13/00*
U.S. Cl. 340—407 **10 Claims**

1. A method of coordinating, in a teaching environment, the activities of a mixed audience of deaf and hearing students to aid said deaf students in following a teacher's instructions and discussions, as translated to sign language for the deaf by an attending trained interpreter, for the purpose of achieving improved information transfer and enhanced learning opportunities, wherein the improvement comprises the steps:
a. isolating the speech of said teacher, by a first transducer having directive sensitivity so arranged as to receive said teacher's speech and to discriminate against ambient sound and audience sources of speech;
b. converting, by said first transducer and a signal processor means, acoustical energy of said teacher's speech pattern to a bistate electrical signal, said electrical signal having a first state representing a silent interval of said teacher and a second state representing a speech interval of said teacher;
c. distributing, by a broadcast communications system responsive to said bistate electrical signal, a coordinating signal to a multiplicity of personal receiving sets, one such personal receiving set kept in the actual presence and within the peripheral field of view of each individual person in the population of said deaf students;



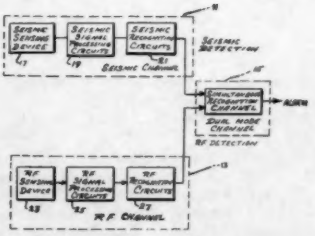
d. converting said coordinating signal as received to silent sensory phenomena, by a second transducer and signal processor means located in each personal receiving set kept in the actual presence of each said deaf student, said phenomena having a first state representing said teacher's silence and a second state representing said teacher's audible speech;
e. displaying said silent phenomena to sensory receptors of the body of each said deaf student, said receptors sensitive to said phenomena in controlling the consciousness of said deaf student to the changing pattern of said teacher's intervals of silence and audible speech, thereby providing timely commands to said deaf student of each need to observe said sign language of said interpreter so as to follow said teacher's entire lecture.

4,368,460

DUAL MODE MOVING TARGET SENSOR

Glenn G. Clinard, Upland; Kenneth C. Guth, Pomona; Gail R. Mulhollam, Upland, all of Calif., and Frank J. Volk, Hickory Hills, Ill., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 13, 1972, Ser. No. 314,644
Int. Cl.³ G08B *13/18*
U.S. Cl. 340—522 **1 Claim**



1. A moving target sensor comprising:
a. means for detecting seismic disturbances;
b. means for recognizing the detected seismic disturbances having predetermined values, the seismic recognizing means including
1. a geophone,
2. a threshold detector fed by the geophone,

3. a clock,
4. a width filter fed by the threshold detector and the clock,
5. a spacing filter fed by the width filter and the clock, and
6. a density filter fed by the spacing filter and the clock;

c. means for detecting RF disturbance signals including
1. a radiating antenna,
2. an impedance controlled oscillator connected to the antenna, the oscillator output being indicative of antenna impedance,
3. a first mixer fed by the impedance controlled oscillator,
4. a local oscillator feeding the first mixer,
5. a discriminator fed by the first mixer,
6. a double balanced mixer fed by the discriminator producing data bits,
7. a logic level converter fed by the double balanced mixer, and
8. a low pass filter fed by the logic level converter and fed back to the impedance controlled oscillator;

d. means for recognizing detected RF disturbance signals having a predetermined value including
1. means for detecting changes of antenna impedance,
2. means for detecting thresholds of antenna impedance, and
3. means for determining the rate of changes of antenna impedance; and

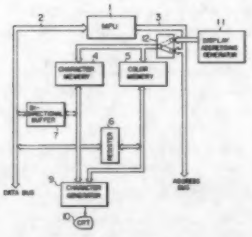
e. means for detecting simultaneous occurrences of the outputs of the seismic recognizing means and the RF recognizing means.

4,368,461

DIGITAL DATA PROCESSING DEVICE

Shigeru Komatsu, Yokohama; Kunihiko Nagai, Zushi; Takuo Koyama; Tsuguji Tachiuchi, both of Yokohama; Mikiaki Kobayashi, Kamakura, and Toshiyuki Kurita, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 2, 1980, Ser. No. 212,232
Claims priority, application Japan, Dec. 3, 1979, 54-155609
Int. Cl.³ G09G *1/02*
U.S. Cl. 340—703 **7 Claims**



1. A digital data processing device comprising:

a plurality of memory means each having a number of corresponding address locations at which data is selectively stored;

addressing means for simultaneously addressing the same address location in each of said plurality of memory means by application of a single address thereto;

a central processing unit connected to one of said memory means by means including a data bus for performing data transfer between said central processing unit and the designated address location of said one memory means;

individual register means each provided in association with each of said memory means except for said one memory means for storing data received from or to be supplied to its associated memory means; and

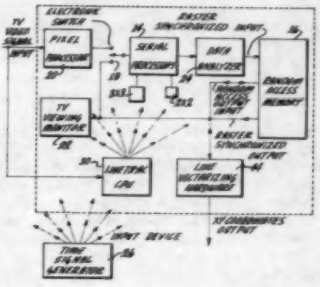
means for effecting data transfer between each register means and the designated address location of each associated memory means simultaneously with data transfer between said central processing unit and said one memory means.

4,368,462

LINE FOLLOWER

Barry J. Crawley, Costa Mesa, Calif., assignor to Teledyne Industries, Inc., Long Beach, Calif.

Continuation of Ser. No. 56,246, Jul. 10, 1979, abandoned. This application Jun. 29, 1981, Ser. No. 278,696
Int. Cl.³ G09G *1/00*
U.S. Cl. 340—723 **27 Claims**



1. A method of providing a digital representation of graphic information on a document wherein the document has been scanned and a signal representative of the graphic information at progressive pixel points on the document has been generated, including the following steps

storing the signal representative of the graphic information in a memory device through an input path,

retrieving the signal representative of the graphic information and feeding the signal through the input path and back to the memory device,

providing serial processing and data analysis to the signal representative of the graphic information on a reiterative basis as the signal is repeatably stored and retrieved and with the serial processing and data analysis including the following steps,

providing pixel arrays from pluralities of adjacent pixels and providing data reduction to center elements, during the serial processing and data analysis, when the pixel arrays have desired characteristics and with all of the graphic information in the signal concentrated to center elements in accordance with the pixel arrays and with surviving pixels which are not part of an array stored and an attribute representative of the level of survival also stored with the surviving pixels,

repeating the above step on a reiterative basis using the surviving center elements from the previous step to form the pixel arrays until there are no more surviving pixel arrays so that the stored surviving pixels and their attributes represent the centroids of the lines of the graphic document and the attributes represent the thickness of the lines, and

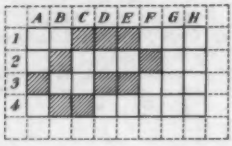
providing pixel arrays from the stored surviving pixels and comparing the pixel arrays with fixed criteria for providing gap filling and elimination of undesired pixels.

4,368,463

GRAPHIC DISPLAY AREA CLASSIFICATION

John E. H. Quilliam, Surrey, England, assignor to Sigma Electronics Limited, Horsham and The University of Surrey, Guilford, both of, England

Filed Mar. 19, 1980, Ser. No. 131,676
Claims priority, application United Kingdom, Mar. 21, 1979, 7910004
Int. Cl.³ G06K 9/20
U.S. Cl. 340—744 14 Claims



1. A raster-scan display apparatus comprising: first store means having a plurality of memory locations for storing data representing respective dot positions of a display field; means operable to store in said store data representing boundary dot positions; second store means having a plurality of memory locations for storing data representing respective dot positions of the display field; means operable to define one or more notional dot positions in or adjacent the field as representing a seed point or points; and classifying means arranged in operation, for each dot position of the display field, to determine whether there exists, from that dot position to the or a seed point, a connected path of dot positions which does not include a dot position which is indicated by the corresponding location in said first store means as being a boundary dot position and, if such a path exists, to set the corresponding location in the second store means.

4,368,464

EIGHT SEGMENT DISPLAY FOR ORIENTAL NUMERALS

Nadim Azzam, Neufahrn, Fed. Rep. of Germany, assignor to Eurosil GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 17, 1980, Ser. No. 217,569
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1980, 3034966
Int. Cl.³ G09G 3/20
U.S. Cl. 340—756 6 Claims

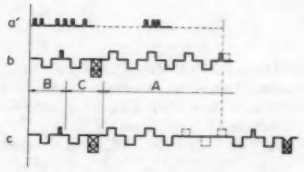
1. In a numerical display arrangement having at least one display device for the selective representation of oriental numerals of the values zero through nine, said display device including individual, discretely controllable electro-optical display segments grouped within a parallelogram-like frame standing on the narrower side thereof, the improvement comprising: said display device including eight segments of which there are arranged along the upper narrow side of said frame, as viewed in a direction towards said display arrangements, two elongate segments adjacent each other and a point-shaped segment; therebelow, along the left lengthier frame side, two elongate segments located below each other; along the right lengthier frame side an elongate segment; a tied-in short segment between said segments extending along the lower narrow frame side; and an elongate diagonal segment in the center region of said frame extending from approximately the lower right frame corner upwardly towards the left.

4,368,465

METHOD OF ACTUATING A PLASMA DISPLAY PANEL

Osamu Hirakawa, and Tadatsugu Hirose, both of Suzaka, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 7, 1981, Ser. No. 290,974
Claims priority, application Japan, Aug. 14, 1980, 55-111103
Int. Cl.³ G09G 3/28
U.S. Cl. 340—771 6 Claims



1. A method of actuating a PDP device using an actuating pulse signal having an erasing mode, a writing mode and a sustaining mode which comprises the steps of:

erasing data displayed on a display panel during the erasing mode;

writing new data on the panel during the writing mode; and

sustaining the display of data during the sustaining mode, the data to be displayed being input by an input signal which is not synchronized with said actuating pulse signal, at least one pulse being eliminated from said actuating pulse signal prior to and during the time the mode of said actuating signal changes.

4,368,466

DISPLAY REFRESH MEMORY WITH VARIABLE LINE START ADDRESSING

Jerold D. Dwire, Round Rock, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 20, 1980, Ser. No. 208,894
Int. Cl.³ G09G 1/16
U.S. Cl. 340—799 15 Claims

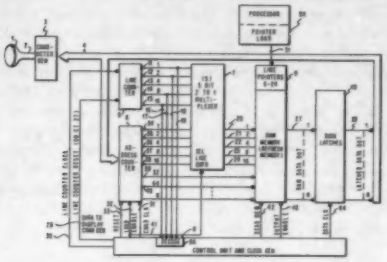
1. A display system wherein a display is refreshed by a refresh buffer containing lines of characters to be displayed comprising:

means for loading line pointers containing the address of the first character in each of said lines into a dedicated area of said refresh buffer;

a refresh buffer address counter; and

a line counter having a count output equal to the number of said lines to be displayed, means for reading a line count from said line counter and means for applying each of said

line counts to said refresh buffer to address the said line pointer at the corresponding address in said dedicated



areas of said refresh buffer to cause reading of said first character addresses into said address counter.

4,368,467

DISPLAY DEVICE

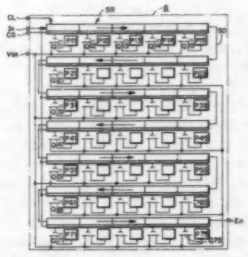
Tomoyuki Unotoro, Tokyo; Kunihiro Tanikawa, Kakogawa; Keizo Kurahashi, Kobe; Hisashi Yamaguchi, Hyogo; Yuichiro Ito, and Yoshihiro Miyamoto, both of Kobe, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 20, 1981, Ser. No. 236,621

Claims priority, application Japan, Feb. 29, 1980, 55-25844; Oct. 31, 1980, 55-154003

Int. Cl.³ G06F *3/14*

U.S. Cl. 340—799 **33 Claims**



1. A display device having a structure combining a plurality of display modules comprising a plurality of display picture elements and semiconductor active elements each operatively connected to one of said display picture elements, wherein said plurality of display modules each further comprise: a circuit substrate, attached to said semiconductor active elements, for driving the semiconductor active elements corresponding to said display picture elements and address circuits, operatively connected to said semiconductor active elements and attached to said circuit substrate, for inputting a display signal and distributing it to said semiconductor active elements.

4,368,468

MONOPULSE RADIO RECEIVER COMPENSATION APPARATUS

Hampton H. Lisle, Crownsville, Md., and Kevin DeMartino, Andover, Mass., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 22, 1980, Ser. No. 219,094

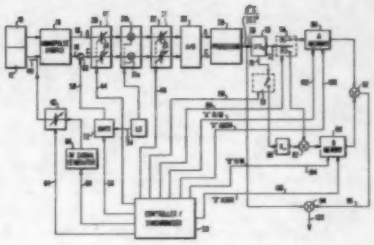
Int. Cl.³ G01S *13/44, 7/40*

U.S. Cl. 343—16 M **13 Claims**

1. In a monopulse radar receiver having at least one sum and difference channel pair for conditioning received target echo signals, each channel comprising at least one attenuator operative in a plurality of attenuation states; and a processor for computing from the conditioned echo signals of said at least one sum and difference channel pair a plurality of first signals correspondingly related to said attenuation states of said channel pair, the improvement comprising:

first means for injecting, at times, a pilot signal into both channels of said at least one pair;

second means for setting the at least one attenuator in each of said sum and difference channels of a pair through said plurality of attenuation states during the injection of said pilot signal to render a corresponding plurality of conditioned pilot signals of said channel pair;



third means, including said processor, for computing a respectively corresponding table of second signals from said rendered plurality of conditioned pilot signals, each computed second signal of said table corresponding to an attenuation state of said plurality of attenuation states of said channel pair;

a memory for storing the computed table of second signals into corresponding memory cells; and

fourth means for compensating each computed first signal with a selected second signal from said memory, said selection based on commonly related attenuation states of said first and second signals.

4,368,469

TRAVELING WAVE INTERFEROMETRY PARTICULARLY FOR SOLAR POWER SATELLITES

James H. Ott, and James S. Rice, both of Akron, Ohio, assignors to Novar Electronics Corporation, Barberton, Ohio

Filed Sep. 17, 1979, Ser. No. 75,943

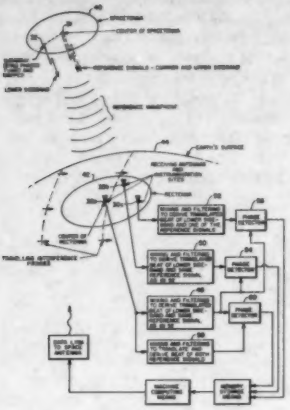
Int. Cl.³ H04B *7/00*

U.S. Cl. 343—100 ST **44 Claims**

1. A method for use in scientific measurement and analysis and comprising:

(a) generating travelling interference fringes by radiating at least two different periodic waves at two different frequencies, one from each of two different radiators;

(b) receiving, mixing and filtering said radiated waves to detect at least one beat signal; and



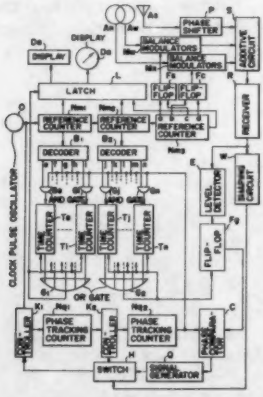
(c) detecting the phase of said beat signal relative to a reference signal of the same frequency.

4,368,470

RADIO DIRECTION FINDER

Kenzo Mori; Hyo Yasuda, both of Tokyo, and Masaru Koshi, Tokorozawa, all of Japan, assignors to Taiyo Musen Co. Ltd., Tokyo, Japan

Filed Mar. 20, 1980, Ser. No. 131,899
Claims priority, application Japan, Dec. 6, 1979, 54-157375
Int. Cl.³ G01S 5/02
U.S. Cl. 343—113 R **5 Claims**



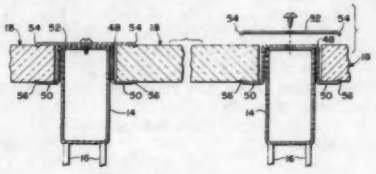
1. A radio direction finder comprising antenna means; a reference counter and a phase tracking counter for repeatedly counting a series of input pulses in synchronism with a period of substantial rotation of said antenna means; a receiver for receiving an output of said antenna means; means for converting the said output of said antenna which is received by said receiver into a signal having a frequency corresponding to the period of the aforesaid rotation and representing a phase angle corresponding to the direction of arrival of a radio wave; transmitter means for transmitting said signal, control means for operating said phase tracking counter in synchronism to the output signal from said receiver by controlling the input pulses to said phase tracking counter according to a phase difference of said output signal with respect to an instant corresponding to a predetermined count of said phase tracking counter, said count having higher and lower place bit values; a detecting circuit for transmitting an output signal when a higher place bit value of the count of said phase tracking counter at an instant corresponding to the aforesaid predetermined count of said phase tracking counter is stabilized; means for switching said control means so as to increase the number of input pulses to said phase tracking counter until said detecting circuit produces an output signal and to reduce the number of input pulses to said phase tracking counter when said output signal from said detecting circuit is produced, and means for displaying the difference between the count of said reference counter and that of said phase tracking counter at a given instant.

4,368,471

ANTENNA ICE REMOVAL AND PREVENTION APPARATUS

William B. Walton, Jr., 5436 Pinto, Rubidoux, Calif. 92509

Filed Aug. 11, 1980, Ser. No. 177,249
Int. Cl.³ H01Q 1/02
U.S. Cl. 343—704 **3 Claims**



1. Apparatus for cooperation with an associated antenna, which is generally dish shaped and has a truss supporting frame, for prevention of the formation of ice and/or removal of accumulated ice which comprises:

means for enclosing substantially the entire convex face of the antenna to define a plenum chamber, said means for enclosing including a plurality of discrete panels dimensioned and configured for engagement with the truss supporting frame of the associated antenna;

means for burning a fuel to create heat, said means for burning being disposed within said plenum chamber;

means for distributing air heated by said means for burning to the geometric extent of the associated antenna;

at least some of said discrete panels being mounted by brackets cooperating with the truss supporting frame, said brackets including at least a generally U-shaped bracket and a generally planar bracket member, said generally U-shaped bracket further including flange surfaces extending in a direction which is generally parallel to said generally planar bracket member.

4,368,472

MICROWAVE DOSIMETER

Om P. Gandhi, Salt Lake City, Utah, assignor to Dosimeter Corporation of America, Cincinnati, Ohio

Filed Oct. 8, 1980, Ser. No. 195,138
Int. Cl.³ H01Q 1/22
U.S. Cl. 343—718 **14 Claims**

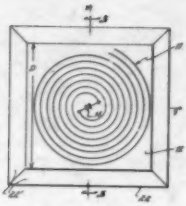
1. Apparatus capable of being worn by a person for providing an indication of the amount of microwave energy absorbed by a person's body at the frequencies in which substantial reflection thereof by the human body normally occurs, comprising:

an antenna at least responsive, for frequencies of microwave radiation in which substantial reflection from the human body occurs, to those components of the electric field of said microwave radiation incident on a body which lie in

a plane generally parallel to said body on which said radiation is incident,

a detector responsive to said antenna for converting energy received by said antenna in said microwave frequency range in which substantial reflection from the human body occurs into a unidirectional voltage having a magnitude proportional to the amount of received energy,

isolating means located between said antenna and said user's body when said antenna is mounted thereon for preventing radiation directed toward said body in said microwave



frequency range in which substantial reflection from the human body occurs from being reflected therefrom to said antenna,

computing means responsive to said detector for providing a signal correlated to the energy absorbed by said body in said frequency range in which substantial body reflection occurs, and

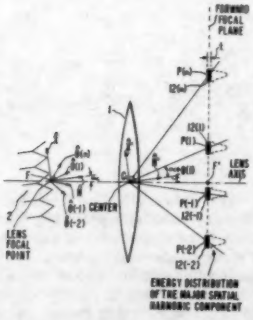
indicating means responsive to said computing means to provide a humanly perceptible output correlated to said energy absorbed by said body in said frequency range in which substantial body reflection occurs.

4,368,473

MICROWAVE LENS RIPPLE FILTER

Howard H. Luh, Sunnyvale, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Sep. 8, 1980, Ser. No. 185,085
Int. Cl.³ H01Q *15/02, 15/10*
U.S. Cl. 343—753 **8 Claims**



1. An antenna system comprising:

a lens capable of focusing electromagnetic radiation;

a feed array generally situated at a first focal plane of said lens and having a plurality of substantially identical radiation-directing feed elements pointed at said lens; and

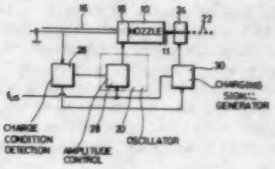
a spatial filter situated in a second focal plane of said lens for reducing the size of sinusoidal perturbations in the main beam region of the radiation pattern associated with said system.

4,368,474

INK DROPLET FORMATION CONTROL IN AN INK JET SYSTEM PRINTER

Fumio Togawa, Yamatokoriyama; Yoichi Shimazawa, and Hitoshi Suzuki, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 10, 1980, Ser. No. 196,256
Claims priority, application Japan, Oct. 11, 1979, 54-131610
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **16 Claims**



1. An automatic ink droplet formation control system in an ink jet system printer which includes a nozzle for emitting an ink jet, an electro-mechanical transducer secured to the nozzle for vibrating the nozzle in response to an excitation signal of a given frequency, thereby forming ink droplets at the given frequency, and charging means for charging the ink droplets in accordance with print information, said automatic ink droplet formation control system comprising:

variation means for automatically varying a voltage level of said excitation signal to be applied to said electro-mechanical transducer; and

control means for developing a control signal to said variation means for automatically maintaining said voltage level of said excitation signal within a range where no satellite ink droplet is formed;

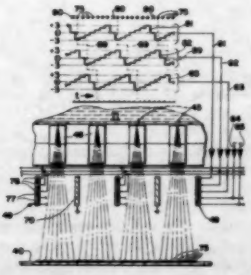
said control means including a charge detection unit for detecting a charge condition of said ink droplets effected by said charging means in order to monitor the occurrence of said satellite ink droplets.

4,368,475

JET DROP COPIER

John W. Donahue, Dayton, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Division of Ser. No. 75,064, Sep. 12, 1979, Pat. No. 4,291,340.
This application Apr. 24, 1981, Ser. No. 256,864
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **7 Claims**



1. Jet drop printing apparatus comprising,

a manifold including means defining a series of uniformly spaced orifices arranged along a straight line,

printing liquid supply means for supplying printing liquid to

said manifold and causing said liquid to exit through said orifices as a row of parallel streams of drops,

an elongated catcher arranged parallel to said line of orifices and positioned for catching those of said drops which follow straight line paths from their orifices,

printing control means for selectively charging predetermined ones of said drops and deflecting said predetermined drops in a first direction to avoid said catcher,

a series of drop scanning electrodes extending between said streams for causing drop scanning in a second direction perpendicular to said first direction, and

scanning signal means for applying a cyclically varying scanning signal to said scanning electrodes;

characterized in that at least alternate ones of said scanning electrodes comprise a plurality of vertically spaced electrode elements and in that said scanning signal is applied to consecutive ones of said electrode elements with a phase delay corresponding to the time required for one of said drops to travel from one electrode element to the next.

4,368,476

INK JET RECORDING HEAD

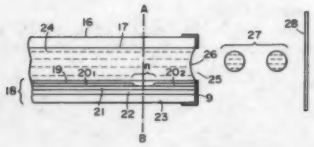
Haruo Uehara, Yokohama; Shigeyuki Matsumoto, Kawasaki; Yasushi Takatori, Sagamihara; Tokuya Ohta, Yokohama, and Yohji Matsufuji, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 3, 1980, Ser. No. 212,448

Claims priority, application Japan, Dec. 19, 1979, 54-165437

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R **5 Claims**



1. An ink jet recording head of the type in which ink droplets are jetted from the jet orifice of the head toward a recording material to effect recording on the surface of the recording material with said ink droplets, with said recording head in at least the area surrounding the jet orifice treated with a compound of general formula:

$$R.Si.X_3$$

wherein, R is a fluorine containing group selected from fluoroalkyl, fluoroaryl, fluorocycloalkyl, fluoroalkaryl and fluoroalkylaryl, each having 1 to 20 carbon atoms, and the ratio in number of fluorines:other elements in said fluorine containing group being not less than 1:1; and X is halogen, a hydrolyzable group selected from alkoxy, alkyl and acyloxy each having 1 to 5 carbon atoms, or hydroxyl.

4,368,477

ARRANGEMENT FOR A PRINTING HEAD IN INK MOSAIC PRINTING DEVICES

Joachim Heinzl, Munich; Erich Kattner, Neubiberg, and Guenter Rosenstock, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 8, 1981, Ser. No. 262,211

Claims priority, application Fed. Rep. of Germany, May 23, 1980, 3019822

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R **8 Claims**

1. An improved printer head for an ink-jet printing device having a plurality of tubular ink ducts extending through said printer head such that downstream ends of said ink ducts converge toward a printing location surface on said printer head, the improvement comprising wherein said downstream ends are each formed with a relatively narrowed leading edge having a discharge orifice, each said leading edge being connected to the remainder of said corresponding duct through a screw-driver form, wedge-shaped tapered segment.

4,368,478

INK SUPPLY SYSTEM FOR INK JET PRINTERS

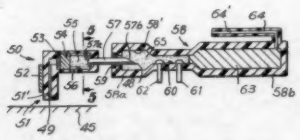
Haruhiko Koto, Shiojiri, Japan, assignor to Shinshu Seiki Kabushiki Kaisha, Nagano and Kabushiki Kaisha Suwa Seikosha, Tokyo, both of, Japan

Filed Jun. 4, 1981, Ser. No. 270,680

Claims priority, application Japan, Jun. 6, 1980, 55/76257; Jun. 6, 1980, 55/76258

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R **45 Claims**

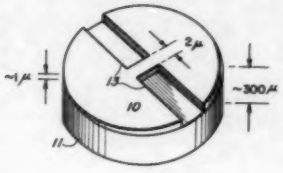


1. An ink jet printer for printing characters and symbols on a recording medium by selectively projecting ink from an ink jet nozzle on a print head toward said recording medium, comprising ink storage means for holding a supply of ink, conduit means connecting said ink storage means to said print head so that ink can be supplied to said nozzle from said ink storage means through said conduit means, and air trapping means disposed along the path of flow of said ink through said conduit means, said air trapping means including a wall which defines an inner chamber, said air trapping means further including first porous means for preventing air bubbles in said ink from flowing into said nozzle and fluid passage means formed in said inner chamber for creating a capillary force which causes said ink to flow to said nozzle through said first porous means past air bubbles in said chamber, said chamber collecting and holding air bubbles prevented from passing into said nozzle by said first porous means.

4,368,479
SILICON BARRIER JOSEPHSON JUNCTION CONFIGURATION

Kenneth L. Davis, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 10,859, Feb. 9, 1979, Pat. No. 4,253,230.
This application Oct. 29, 1980, Ser. No. 201,898
Int. Cl.³ H01L 39/22, 29/06
U.S. Cl. 357—5 6 Claims

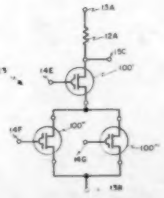


1. A planar, silicon barrier, Josephson junction which comprises:
- a single-crystal silicon wafer;
  - said silicon wafer including a barrier;
  - said barrier being formed by oppositely disposed channels in the upper surface of said wafer on each side of said barrier; and
- a superconducting film laid on the bottom surface of each of said channels in contact with said barrier.

4,368,480
MULTIPLEXING OF CHEMICALLY RESPONSIVE FETS

Stephen D. Senturia, Boston, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 893,552, Apr. 5, 1978, Pat. No. 4,236,121.
This application Dec. 17, 1979, Ser. No. 104,641
Int. Cl.³ H01L 29/78, 29/66, 27/52
U.S. Cl. 357—25 3 Claims

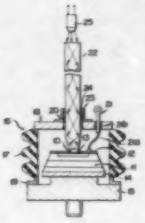


2. A sensor circuit comprising, in combination, at least two charge flow transistors, each transistor comprising:
- (a) a semiconductor substrate;
- (b) a drain region;
- (c) a source region;
- (d) a gapped gate electrode; and
- (e) a thin-film material said transistors each having a TURN-ON time determined primarily by the conductance of the said film materials and said transistors are connected in parallel, source to source, whereby coupling the charge flow transistors as logic elements permits changes in the ambient environment which affect said film materials to be monitored.

4,368,481
LIGHT-DRIVEN SEMICONDUCTOR DEVICE

Hiromichi Ohashi, and Yoshihiro Shirasaka, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jun. 10, 1980, Ser. No. 158,324
Claims priority, application Japan, Jun. 19, 1979, 54/77148; Oct. 29, 1979, 54/138659; Oct. 31, 1979, 54/140663
Int. Cl.³ H01L 27/14
U.S. Cl. 357—30 16 Claims

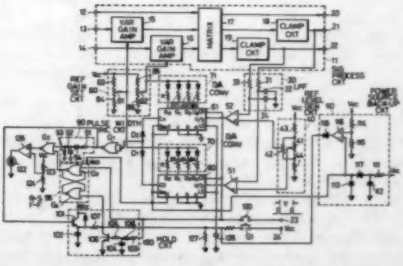


1. A light-driven semiconductor device comprising:
- a light-driven semiconductor element having a light sensitive area;
- an envelope containing said element;
- a light guide having an output end located in the vicinity of said light sensitive area and an input end located outside said envelope, whereby a light signal supplied to said input end is guided and emitted from said output end; and
- an elastic body interposed between the output end of said light guide and the light sensitive area of said semiconductor element and pressed against said light sensitive area by said output end to cause elastic deformation of said body, whereby said output end is located relatively to said light sensitive area and the light signal emitted from said output end is led to said light sensitive area.

4,368,482
AUTOMATIC WHITE ADJUSTING CIRCUIT FOR A TELEVISION CAMERA

Toyotaka Machida, Kashiwa, and Yuichi Ikemura, Nagareyama, both of Japan, assignors to Victor Company of Japan, Kanagawa, Japan

Filed Sep. 2, 1980, Ser. No. 183,392
Int. Cl.³ H04N 9/535
U.S. Cl. 358—29 6 Claims



1. An automatic white adjusting circuit for a television camera having a color image pick-up device, said automatic white adjusting circuit comprising;
- first and second variable gain amplifying means for amplifying two predetermined primary color signals of the three primary color signals from an output signal of said image pick-up device;

matrixing means for producing two color difference signals by being supplied with either a luminance signal from the output of said image pick-up device or one remaining primary color signal of the three primary color signals, and outputs of said first and second variable gain amplifying means;

averaging means for producing first and second white detection signals by substantially averaging all or part of the respective video duration time of said output color difference signals from said matrixing means;

reference level producing means in which a reference level equal to a DC level of said two predetermined color difference signals of said output signal of the image pick-up device upon image-picking up of a white object by said image pick-up device is produced;

first and second level comparing means for respectively comparing the levels of said first and second white detection signals from said averaging means with said reference level from said reference level producing means;

first and second control voltage producing means for producing first and second control voltages according to the outputs of said first and second level comparing means,

said first and second control voltages being supplied respectively to said first and second variable gain amplifying means, and controlling their respective gains so that said two color difference signals from said matrixing means upon image-picking up of the white object by said image pick-up device become substantially zero;

a clock pulse supplying means;

said first and second control voltage producing means comprising, respectively, first and second reversible counters for producing said first and second control voltages according to the counted value obtained by counting said clock pulse supplied thereto and by being supplied with said first and second white detection signals as counting operation control signals;

means for preventing the supply of said clock pulse to said first and second reversible counters, stopping the counting operation of said first and second reversible counters, and holding the counted value, said first and second control voltages being held constant at values upon the stoppage of the counting operation of said first and second reversible counters;

said first and second control voltage producing means further comprising series connected circuits having weighting resistors and diodes, said series connected circuits being connected in series between digital count output termnals of said first and second reversible counters and a voltage source, said first and second control voltages being supplied to said first and second variable gain amplifying means through said series connected circuits; a power source back-up circuit including a capacitor connected to said voltage source for operating said first and second reversible counters and charged by said voltage source, said capacitor applying an operating voltage to said first and second reversible counters for a certain time period after cut-off of said voltage source.

4,368,483

VIDEO SIGNAL DEFECT REPLACEMENT CIRCUITRY

Frank C. Liu, Phoenix, Ariz., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 22, 1981, Ser. No. 276,011

Int. Cl.³ H04N 9/535, 5/21

U.S. Cl. 358—36 **3 Claims**

1. A video signal processing system for providing defect compensation for a color video signal by substituting a replacement color signal for color video signal during the period of a video signal defect comprising:

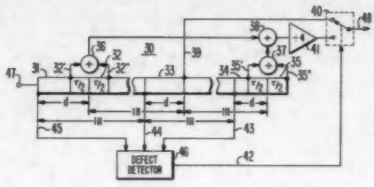
a source of video signals;

first delay means for delaying said video signal by substantially one television line to provide a first signal;

second delay means coupled to said first delay means, said first and second delay means delaying said video signals by substantially two television lines to provide a second signal;

first combining means coupled to said source of video signals for combining signal therefrom temporally separated by one color subcarrier period, the combined signal being equal in color subcarrier phasing to said first signal;

second combining means responsive to said second signal for combining signals temporally separated by one color subcarrier period, the combined signal from said second combining means being equal in color subcarrier phasing to said first signal, and wherein the first signal is delayed



from the combined signal from said first combining means by one television line and the combined signal from said second combining means is delayed from said first signal by one television line;

third combining means for generating a replacement signal proportional to the combined signals from said first and second combining means; and

switch means responsive to a defect signal for coupling said replacement signal to a video output terminal, and coupling said first signal to said video output terminal otherwise.

4,368,484

DEVICE FOR COLOR SCANNING WITH CCD ARRAY

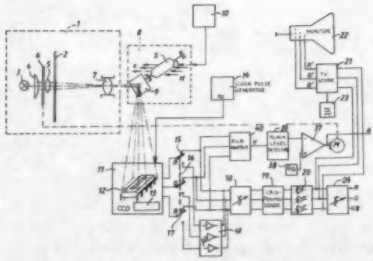
Otto Stemme, Munich, and Eduard Wagensonner, Aschheim, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Jan. 9, 1981, Ser. No. 223,721

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1980, 3004717

Int. Cl.³ H04N 9/02

U.S. Cl. 358—41 **12 Claims**



1. In an apparatus for electronically scanning optical images, including an optoelectronic converter device having an electronic circuit for linewise conversion of the scanned image into video signals, a device for recording on photosensitive paper image point signals from a video tube unit receiving the video signals and forming part of the device, and a monitor for screening of the video image produced by the video signals, the improvement wherein the opto-electronic converter device comprises a CCD-array including red-sensitive, green-sensitive and blue-sensitive photo diodes in a number assuring

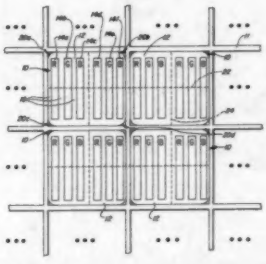
an image resolution which is higher than the resolution of video images; and further comprising an optical deflecting system for deflecting light rays from an optical image onto the CCD-array to reproduce the image linewise on the array at a first frequency which is much smaller than the video image frequency; shift register means connected with said CCD-array to receive image signals therefrom and including an oscillator which effects pulsed linewise transmission of the image signals out of the shift register means at a second frequency which is higher than said first frequency by a factor at least equal to the lines of a video image; signal processing means connected with said shift register means for receiving signals therefrom and converting them to video signals which are supplied to the video tube unit at the image point frequency; and electronic storage means for the monitor which skips at least every other image point and stores and screens at most every second image point on the monitor.

4,368,485

BILLBOARD LARGE SCREEN TV

Richard W. Midland, Inverness, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Apr. 13, 1981, Ser. No. 253,425
Int. Cl.³ H04N *9/22, 5/68;* G09G *1/16, 1/28*
U.S. Cl. 358—64 **13 Claims**



1. A billboard video display system for producing a selected billboard display picture consisting of a plurality of picture elements, said system comprising:

a plurality of cathode ray tubes arranged in a predetermined configuration, the viewing screens of said cathode ray tubes compositely forming a billboard system display screen;

deflection means for causing an electron beam generated by each of said cathode ray tubes to scan its associated viewing screen; and

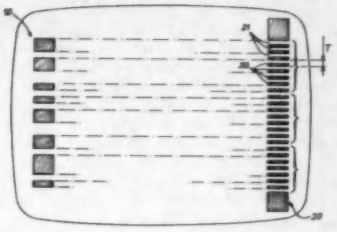
means for generating and coupling a control signal for independently modulating said electron beam of each of said cathode ray tubes for producing a low-valued plurality of said picture elements on the screen of each of said cathode ray tubes, the picture elements produced by said plurality of cathode ray tubes combining to form said selected billboard display picture on said billboard system display screen with the picture elements associated with each of said cathode ray tubes representing an unrecognizably small portion of said billboard display picture.

4,368,486

TELEVISION SYSTEM USING A MARKING CODE SUPERIMPOSED ON THE PICTURE

Gabriel Degoulet, Montfort; Gilbert Gaucher, Chateaugiron, and Christian Gauthier, Acigne, all of France, assignors to Etablissement Public de Diffusion dit "Telediffusion de France", Montrouge and L'Etat Francais, represente par le Secretaire d'Etat aux Postes et Telecommunications (Centre National d'Etudes des Telecommunications), Issy les Moulineaux, both of, France

Filed Feb. 25, 1981, Ser. No. 237,925
Claims priority, application France, Mar. 4, 1980, 80 04810
Int. Cl.³ H04N *7/04*
U.S. Cl. 358—146 **6 Claims**



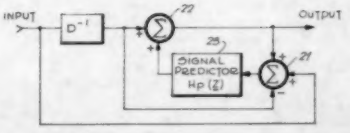
1. A television system comprising a means for superimposing a marking code on one of the pictures to be televised and a decoder able to detect the presence of this code in the pictures, wherein the said marking code is formed by a first vertical strip constituted by a periodic sequence of alternately white and black areas, said strip being positioned along one of the lateral edges of the picture and by a second vertical strip constituted by a sequence of white or black areas, each extending over a height equal to the period of said sequence formed by the first strip, said second strip being located along the other lateral edge of the picture, the video signal corresponding to a picture having received such a code thus incorporating black or white signals located at the start and finish of a scanning line, and wherein the decoder comprises a circuit for detecting, in the video signal which it receives, the presence of white and black signals located at the start and finish of the line and for recognising, on the basis of the thus detected signals, the presence of said code and for transmitting a control order.

4,368,487

METHOD AND APPARATUS FOR MITIGATION OF DEGRADATIONS CAUSED BY SPATIO-TEMPORAL FILTERING OF VIDEO SIGNALS

Mohamed S. Sabri, Beaconsfield, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Feb. 17, 1981, Ser. No. 234,787
Int. Cl.³ H04N *5/14*
U.S. Cl. 358—166 **17 Claims**



1. A method for reconstructing video signals conditioned by a characteristic filtering function including the steps of operating in a predetermined manner on said video signals to predict alternate signals therefrom, and summing said alternate signals and said video signals, characterized by the simultaneous step

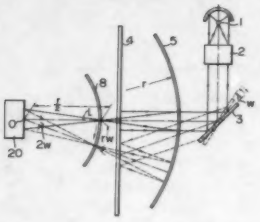
of conditioning said video signals by the inverse of said characteristic filtering function.

4,368,488

PICTURE SCANNING METHOD AT HIGH SPEED

Takashi Sakamoto, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Nov. 20, 1980, Ser. No. 208,636
Claims priority, application Japan, Nov. 26, 1979, 54-152826
Int. Cl.³ H04H 3/08
U.S. Cl. 358—208 14 Claims



1. A method for scanning an original picture by a light beam at a high speed for use in a picture reproducing machine, comprising the steps of:

(a) deflecting a light beam which is generated by a light source, by a light deflector which is pivotally oscillated, the deflected light passing by a concave mirror;

(a 1) reflecting the light beam back to said concave mirror;

(b) focusing the deflected light beam by a concave mirror;

(c) scanning an original picture by a light spot obtained by focusing the light beam by the concave mirror, while the light deflector is oscillated, the original picture being arranged in a curved plane including a curve along which the light spot is focused; and

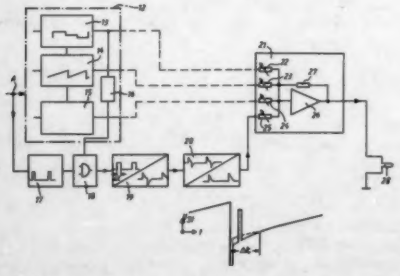
(d) detecting the light beam passing through the original picture by a light detector to obtain a picture signal.

4,368,489

GALVANOMETER-TYPE TILTING-MIRROR SCANNING SYSTEM AND CIRCUIT THEREFOR

Otto Stemme, Munich; Eduard Wagensonner, Aschheim, and Wolfgang Ruf, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 56,789, Jul. 11, 1979, Pat. No. 4,330,793. This application Jun. 30, 1981, Ser. No. 279,038
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1978, 2831296; Jul. 1, 1980, 3024903
Int. Cl.³ H04N 3/08; G02B 27/17
U.S. Cl. 358—208 6 Claims



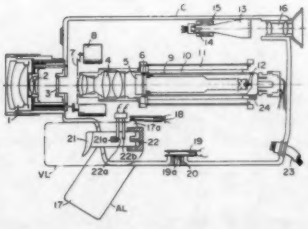
1. In a scanning system of the type which scans originals by shifting an image of an original projected onto the photodiode row of a charge-coupled device in a direction transverse to the photodiode row, in combination, a galvanometric tilting-mirror mechanism including a mirror mounted for tilting motion and used to shift the projected image of an original to be scanned, and including an oil-filled structure operative for damping the motion of the tilting-mirror mechanism; heating means operative for stabilizing the temperature of the oil in the oil-filled structure; control circuit means generating a control signal which determines the tilting motion of the mirror and is comprised of plural control-signal components, including a sawtooth-waveform component which determines the forwards-direction scanning sweep speed of the tilting mirror, a tiltback component in the form of a pulse of a polarity causing the tilting mirror to perform a rapid tiltback motion, a forwards-accelerating component in the form of a pulse of a polarity which brakes the rapid tiltback motion and accelerates the mirror back up to its forwards-direction scanning speed, the sum of the durations of the tiltback component and the forwards-accelerating component not exceeding the vertical blanking interval of the standard T.V. scanning schedule employed, and a corrective component in the form of a pulse which compensates for the loss of linearity as between the sawtooth-waveform component and the motion of the mirror which would occur in the absence of the corrective component.

4,368,490

CAMERA

Hiroyuki Takimoto, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 7, 1980, Ser. No. 204,877
Claims priority, application Japan, Nov. 15, 1979, 54/148617; Nov. 15, 1979, 54/148618
Int. Cl.³ H04N 5/30, 5/76
U.S. Cl. 358—217 25 Claims



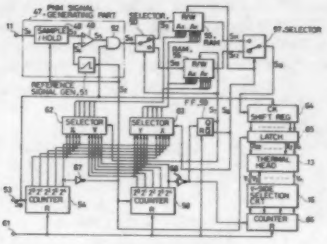
1. A camera having excitable image pick-up means to output image signals, and setting means for controlling said pick-up means, said setting means having a first setting mode for bringing said image pick-up means into a non-excited state, a second setting mode for bringing said image pick-up means into a first excited state, wherein said setting means has means for detecting cocking of a grip of the camera and bringing about said second setting mode, and a third setting mode for bringing said image pick-up means into a second excited state and making it possible to output said image signals from said image pick-up means.

4,368,491

DRIVING EQUIPMENT FOR MULTI-GRADATION LEVEL REPRODUCTION

Takashi Saito, Yokosuka, Japan, assignor to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Feb. 2, 1981, Ser. No. 230,481
Claims priority, application Japan, Feb. 4, 1980, 55/11517
Int. Cl.³ H04N *1/40*
U.S. Cl. 358—283 **10 Claims**



1. A driving equipment for multi-gradation level reproduction, comprising:

pulse number modulated signal generating means for converting an input picture signal including gradation level information into a serial digital signal, having K (an integer 2 or more) bits $P_{i,1}$, $P_{i,2}$, . . . , $P_{i,K}$ (i being the number of a picture element) per picture element, corresponding to the gradation level of the picture element to obtain a first time-serial signal $P_{1,1}$, $P_{1,2}$, $P_{1,3}$, . . . , $P_{1,K}$, $P_{2,1}$, $P_{2,2}$, $P_{2,3}$, . . . , $P_{2,K}$, . . . , $P_{M,1}$, $P_{M,2}$, $P_{M,3}$, . . . , $P_{M,K}$;

sequence converting means for converting the first time-serial signal into a second time-serial signal which, letting each bit of the first time-serial signal be represented by $P_{i,j}$ (j=1, 2, . . . K), has bits $P_{1,1}$, $P_{2,1}$, $P_{3,1}$, . . . , $P_{M,1}$, $P_{1,2}$, $P_{2,2}$, $P_{3,2}$, . . . , $P_{M,2}$, . . . , $P_{1,K}$, $P_{2,K}$, $P_{3,K}$, . . . , $P_{M,K}$ so that the number j may continue for M bits while changing in a sequential order;

serial-parallel converting means for serial-parallel converting the second time-serial signals by steps of M bits into parallel signals of M bits; and

dirving means for applying the parallel signals of M bits simultaneously to M reproduction elements.

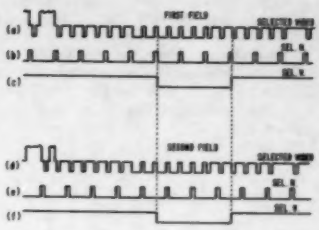
4,368,492

VERTICAL SYNC INDEPENDENT DIGITAL SKEW SERVO

James W. Chamberlain, Philadelphia, Pa., and Arthur M. Goldschmidt, Moorestown, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 20, 1980, Ser. No. 161,452
Claims priority, application United Kingdom, Apr. 8, 1980, 8011558
Int. Cl.³ G11B *21/02, 5/43*
U.S. Cl. 360—70 **11 Claims**

1. A method for correcting for the effects of television recording tape effective length variations, said method comprising comparing a horizontal synchronization signal from the tape with a reference horizontal synchronization signal at two different times per field just before and just after the vertical period respectively to form two comparison signals, subtracting said two comparison signals from each other to form an



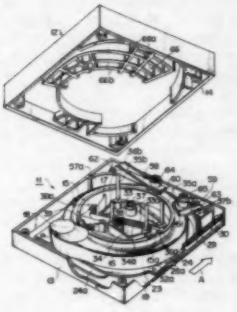
error signal, and using said error signal to correct for the effects of said effective length variations.

4,368,493

TAPE CASSETTE DEVICE

Takashi Komatsu, Yokohama; Tadao Seki, Iwatsuki, and Yuichi Igarashi, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 15, 1980, Ser. No. 216,502
Claims priority, application Japan, Dec. 26, 1979, 54-169745
Int. Cl.³ G11B *15/00, 15/70*
U.S. Cl. 360—93 **10 Claims**



1. A tape cassette device comprising:

a cassette case;

a stationary reel which is disposed inside said cassette case and which has a tape guide path extending from the outer circumference to the inner circumference of said stationary reel;

an endless tape which is wound on the outer circumference of said stationary reel and the innermost part of which is drawn out along said guide path to the inside of said stationary reel to be wound on the outer circumference of said stationary reel;

said case having a bottom plate having a scanning head and tape drive mechanism inserting opening located at the inside of said stationary reel; and

closing means disposed inside said cassette case and displaceable along the axis of said stationary reel between a first position where it is located at the side of said bottom plate for closing said opening and a second position where it is located away from said bottom plate for opening said opening,

wherein said closing means includes at least one slider and means for displaceably guiding said sliders along the axis of said stationary reel between the first and second positions.

4,368,494

PLAYER FOR MAGNETIC TAPE CARTRIDGE RECORDINGS

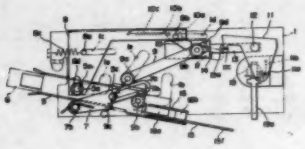
Teturo Kamimura; Masahiro Komatsubara; Shizuo Ando, and Takuzi Inanaga, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 29, 1980, Ser. No. 220,985

Claims priority, application Japan, Dec. 29, 1979, 54-181898[U]; Dec. 29, 1979, 54-181899[U]

Int. Cl.³ G11B *15/66*

U.S. Cl. 360—96.5 **8 Claims**



1. A player for magnetic tape cartridge recording and playback operation comprising:

a chassis having a main surface;

a cartridge holder mounted for motion within said chassis and adapted to receive a tape cartridge from without said chassis at an initial oblique position with respect to the main surface;

guide means including:

two sets of L-shaped guide grooves in opposite side walls of said chassis, each groove including a first groove portion parallel to the main surface and a second groove portion extending from the first groove portion substantially perpendicular thereto;

and

two sets of guide members affixed to opposite side walls of said cartridge holder and received in the corresponding guide grooves;

said guide means allowing said cartridge holder to be translated into said chassis to an intermediate oblique position along the first groove portions and then turned from the intermediate oblique position to a position parallel to the main surface about the trailing guide members; and

means for biasing said cartridge holder so as to move it from the intermediate oblique position to the parallel position along the second guide groove portions.

4,368,495

CARTRIDGE LOADING MECHANISM FOR MAGNETIC DISK DRIVE

Kunio Hamanaka, Hinode, and Keigo Takahashi, Ome, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jun. 10, 1980, Ser. No. 158,325

Claims priority, application Japan, Jul. 13, 1979, 54-88765

Int. Cl.³ G11B *17/04*

U.S. Cl. 360—97 **7 Claims**

1. A cartridge loading mechanism for magnetic disk drive apparatus, comprising:

a housing with an opening at the front end thereof;

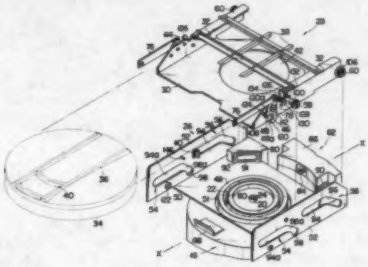
a driving means disposed in said housing;

a cartridge receiver means having a base plate to bear a magnetic disk cartridge inserted through said opening and containing a magnetic disk which is adapted to be rotated by said driving means, said cartridge being capable of being slid on said base plate in a longitudinal direction to be located in a given oriented position, said base plate having an opening therein;

first guide means for guiding the cartridge on said cartridge receiver means, said first guide means including straight guide ridge means formed on said cartridge and straight guide bar means mounted on said cartridge receiver means and extending in said longitudinal direction, said straight guide bar means engaging said guide ridge means while said cartridge is slid and supported on said base plate, so that said cartridge may be properly oriented and located angularly relative to said cartridge receiver means;

means for limiting longitudinal movement of said cartridge relative to said cartridge receiving means to properly locate the cartridge longitudinally relative to said cartridge receiver means;

second guide means for guiding said cartridge receiver means to an operating position where the magnetic disk in said cartridge receiver means is coupled with said driving means when said cartridge receiver means is pushed in



backward and longitudinally of said housing after said cartridge is properly oriented and located relative to said cartridge receiver means and for guiding said cartridge receiver means to a non-operating position to allow take-out and setting of the cartridge when said cartridge receiver means means is pulled forward;

shift means for moving said cartridge receiver means forward and backward in the longitudinal direction; and

coupling means for coupling said driving means with said magnetic disk, said driving means having a sealing projection protruding from said driving means to surround said coupling means and extend through said base plate opening when said cartridge receiver means is in said operating position to abut against the bottom of said cartridge.

4,368,496

MAGNETIC HEAD

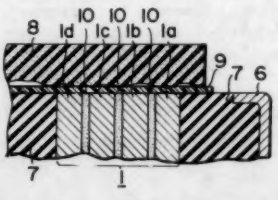
Hiroaki Kato, Machida; Junji Hamana, Chichibu; Akeo Sakai, Saitama; Yoshio Kawakami, Chichibu; Atsushi Goto, Hanno, and Saichiro Amano, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 14,849, Feb. 26, 1979, abandoned. This application Jan. 29, 1981, Ser. No. 230,107

Claims priority, application Japan, Mar. 1, 1978, 53-23221; Mar. 7, 1978, 53-25611; Jan. 23, 1979, 54-7321

Int. Cl.³ G11B *3/08, 5/08*

U.S. Cl. 360—110 **7 Claims**



1. A magnetic head, comprising:

a head core including a plurality of core halves joined to each other; and

a coil wound on said head core;

wherein each of said plurality of core halves comprises:

at least one thin plate of a predetermined thickness composed of a high-magnetic permeability material; and

at least two adhesive layers adhered to and solidificd on opposing surfaces of said plate, said adhesive layers being composed of an electrically insulative resin and fine inorganic granular particles of a material harder than said high-magnetic permeability material, said particles being added to said resin in an amount of from 20 to 70 percent by weight of said resin such that said adhesive layers have a higher degree of abrasion resistance than said plate, the thickness of said adhesive layers being in a range of from one-hundredth to one-thirtieth said predetermined thickness of said plate such that said relatively thick plate having a relatively low degree of hardness and said relatively thin adhesive layers having a relatively high degree of hardness abrade at a substantially uniform rate,

whereby degradation of performance due to uneven abrasion of said plate and layers is mitigated.

4,368,497

TAPE CASSETTE

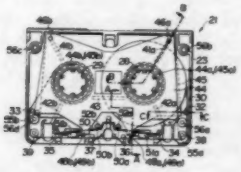
Hideo Shirako, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Filed Dec. 29, 1980, Ser. No. 220,901

Claims priority, application Japan, Feb. 20, 1980, 55-21332[U]; Feb. 25, 1980, 55-23748[U]; Feb. 25, 1980, 55-23749[U]

Int. Cl.³ G11B *23/08*

U.S. Cl. 360—132 **4 Claims**



1. A tape cassette comprising:

a pair of tape hubs including openings which are engaged by tape hub drive shafts and rotatably disposed in tape hub locating apertures which are formed in a pair of upper and lower cassette halves at laterally spaced positions, said tape hubs having upper and lower surfaces separated by tape receiving surfaces;

a pair of liner sheets disposed along the respective inner surfaces of the upper and lower cassette halves and having a pair of openings formed therein at laterally spaced position, the openings being of a diameter which is slightly less than the diameter of an outer peripheral surface of the respective tape hubs on which a tape is disposed, the openings permitting the drive shafts to extend therethrough; and

ribs formed on the inner surface of the upper and lower cassette halves in alignment with each other, the spacing between the ribs being less than the height of tape receiving surfaces of the tape hubs so that portions of the liner sheets which are located around the openings formed therein and overlap said upper and lower surfaces of said tape hubs are thereby flexed toward the inner surface of the adjacent cassette half in the region of the tape hub.

4,368,498

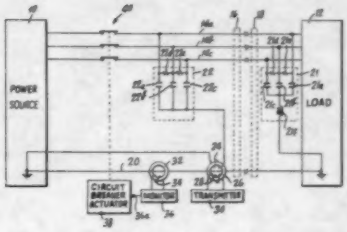
GROUND CONDUCTOR MONITORING SYSTEM

Donald E. Neuhouser, Huntington, W. Va., assignor to Harvey Hubbell Incorporated, Orange, Conn.

Continuation of Ser. No. 22,167, Mar. 20, 1979, abandoned. This application Jul. 9, 1980, Ser. No. 167,018

Int. Cl.³ H02H *5/10*

U.S. Cl. 361—48 **6 Claims**



1. A ground conductor monitoring system for use with a cable system having power conductors carrying electrical power between a source and a load and a ground conductor connecting the source and the load to each other comprising:

a transmitter toroid surrounding the ground conductor, a transmitter coil wound on the transmitter toroid, a transmitter driving the transmitter coil with a monitoring a-c signal and a booster coil also wound on the transmitter toroid and having said monitoring signal induced therein;

a filter electrically connecting one side of the booster coil to the source side of the power conductors and passing said monitoring signal but not said power, a filter connecting the load side of the power conductors to the load side of the ground conductor and passing said monitoring signal but not said power, and an electrical connection between the other side of the booster coil and the source end of the ground conductor;

whereby the ends of the booster coil are connected to each other through a series circuit comprising the ground conductor, the load side filter, the power conductors and the source side filter, and said monitoring signal induced in the booster coil flows through said series circuit;

a monitor toroid also surrounding the ground conductor and a monitor coil wound on the monitor toroid to have induced therein said monitoring signal flowing in the ground conductor, and a monitor coupled with the monitor coil and responsive to an interruption in the monitoring signal induced in the monitor coil to generate a tripping signal indicative of a possible discontinuity in the ground conductor.

4,368,499

ELECTRICAL EQUIPMENT PROTECTION APPARATUS

Francis J. Stifter, Natick, Mass., assignor to Electronic Specialists, Inc., Natick, Mass.

Filed Mar. 2, 1981, Ser. No. 239,391

Int. Cl.³ H02H *3/20, 3/24*

U.S. Cl. 361—90 **11 Claims**

1. Electrical equipment protection apparatus comprising:

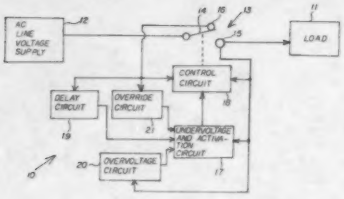
circuit interrupter means for connection between an AC supply and equipment to be protected and operational in a first condition to transmit power therebetween and operational in a second condition to interrupt power transmission therebetween;

control circuit means for producing said first condition in response to normal voltage from the AC supply and for producing said second condition in response to an abnormal voltage therefrom;

delay circuit means connected to said control circuit means

and adapted to produce a minimum time delay between successive occurrences of said first condition;

overvoltage means connected to said control circuit means and adapted to produce said second condition in response to an input voltage from the AC supply that exceeds a predetermined maximum level; and



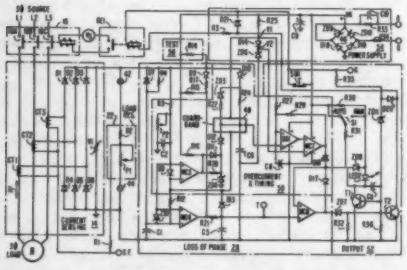
coupling circuit means for connecting said delay circuit means to the AC supply during said second condition and for electrically isolating said delay circuit means from the AC supply during said first condition.

4,368,500

SOLID-STATE LOAD PROTECTION SYSTEM HAVING AN IMPROVED INVERSE TIME DELAY CIRCUIT

Ernest F. Conroy, Jr., and Robert T. Elms, both of Monroeville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 27, 1981, Ser. No. 258,107
Int. Cl.³ H02H *3/093*
U.S. Cl. 361—94 **12 Claims**



1. A load protection system, comprising:

sensor means for sensing circuit current in an electrical circuit, said sensor means providing a first output signal which is related to said circuit current;

inverse time overload means connected to said sensor means for providing a second output signal at a time which is inversely proportional to the magnitude of said electrical circuit current provided said magnitude of said electrical circuit persists for a predetermined period of time, exceeding a predetermined level;

first unidirectional voltage means having one terminal connected to said inverse time overload means and the remaining terminal connected to a storage device means for prohibiting the charging of said storage device during normal operating conditions;

second unidirectional voltage means having one terminal connected to said inverse time overload means and the remaining terminal connected to an electrical storage device means for prohibiting the discharging of said storage device during an overcurrent condition;

said storage device means connected to said pair of unidirectional voltage means for storing a potential level whose magnitude is related to the magnitude of said circuit current in said electrical circuit;

impedance minimization means adjacent to said inverse time overload means for minimizing impedances affecting said inverse time overload means; and

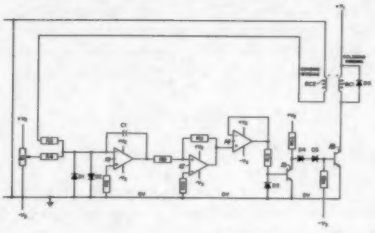
circuit control trip means connected to said inverse time overload means and to said electrical circuit for opening said electrical circuit when said second output signal is provided.

4,368,501

CONTROL OF ELECTRO-MAGNETIC SOLENOID

John A. Gingrich, Toronto, Canada, assignor to Dover Corporation, New York, N.Y.

Filed Sep. 26, 1980, Ser. No. 191,128
Int. Cl.³ H01H *47/32*
U.S. Cl. 361—152 **9 Claims**



1. A control for the activation or deactivation of an electromagnetic device having a primary operating winding, comprising:

a first switching means for controlling the flow of current through the primary winding of the device,

a sensing winding, magnetically coupled to said primary winding, in which a voltage related to the rate of change of flux in said primary winding is induced,

control means for controlling the switching of said first switching means in response to a predetermined change in flux;

means coupled to receive said induced voltage for producing a change of flux signal and for supplying said signal to said control means; and

biasing means for altering said signal for producing a change of the average flux level in said electromagnetic device at a controlled, predetermined rate.

4,368,502

LEAD-LAG LOAD LOCKOUT CONTROL

Eugene R. Jornod, Caledonia, and Steven D. Siden, Loves Park, both of Ill., assignors to Barber-Colman Company, Rockford, Ill.

Filed May 5, 1981, Ser. No. 260,249
Int. Cl.³ H01H *47/00*
U.S. Cl. 361—192 **14 Claims**

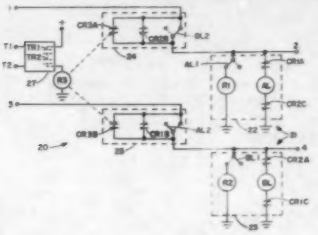
1. A lead-lag load lockout control system for automatically locking out the lag load in a dual load system set up in a lead-lag configuration, and lockout control system comprising:

a first lockout circuit associated with a first load and comprising in parallel a first load switch, a first lockout switch, and a first lockout control switch;

a second lockout circuit associated with a second load and comprising in parallel a second load switch, a second lockout switch, and a second lockout control switch;

a lead-lag memory circuit for storing lead load and lag load identification during system operation comprising a first memory relay circuit connected between said first lockout circuit and a first output terminal and operable to open said second load switch and said second lockout switch

when said first load is the lead load, and a second memory relay circuit connected between said second lockout circuit and a second output terminal and operable to open said first load switch and said first lockout switch when said second load is the lead load; and



a lockout control means for selectively opening the lead load lockout control switch in response to a predetermined condition.

4,368,503

HOLLOW MULTILAYER PRINTED WIRING BOARD

Keiji Kurosawa; Kenji Yamamoto; Mitsuo Yamashita; Hisami Mitsui; Ayako Miyahara, all of Nagano; Kiyotaka Miyagawa, Suzaka, and Takayoshi Imura, Nagano, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

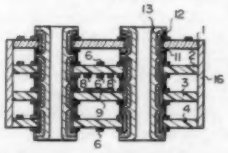
PCT No. PCT/JP80/00111, § 371 Date Jan. 24, 1981, § 102(e) Date Jan. 16, 1981, PCT Pub. No. WO80/02633, PCT Pub. Date Nov. 27, 1980

PCT Filed May 23, 1980, Ser. No. 229,594

Claims priority, application Japan, May 24, 1979, 54-64329

Int. Cl.³ H05K *1/14*

U.S. Cl. 361—414 **14 Claims**



1. A hollow multilayer printed wiring board comprising a plurality of superposed substrates,

each said superposed substrate having a signal conductor pattern formed on at least one surface of said superposed substrate and a ground conductor pattern formed on at least one surface of said superposed substrate,

said superposed substrates being superposed upon each other with a predetermined space therebetween being filled with an insulative gas or liquid,

each said superposed substrate having plated through holes in the ground conductor pattern, said plated through holes comprising a plating layer having upper and lower end surfaces, each of said plated through holes being in line with at least one other said plated through hole of each of the adjacent superposed substrates to form an interstitial hole, a layer of a low melting point metal being formed at least on the upper and lower end surfaces of the plated layer defining each said plated through hole,

said layer of a low melting point metal serving as a through connection between two or more said signal conductor patterns of the superposed substrates and as an interlayer adhesion between the superposed substrates,

all but one of the superposed substrates being made of one of a first group of materials consisting of a thermally resistant organic synthetic resin sheet and an insulation-treated metal sheet, said one of said superposed substrates being made of materials from a second group.

4,368,504

TASK LIGHTING APPARATUS

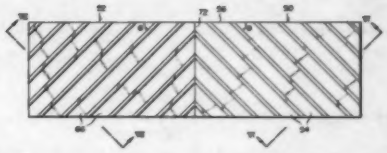
Kozi Sato, Yokohama, and Tadahiro Kaneko, Tokyo, both of Japan, assignors to Toshiba Electric Equipment Corporation, Tokyo, Japan

Filed Sep. 22, 1981, Ser. No. 304,608

Claims priority, application Japan, Sep. 22, 1981, 56-131868

Int. Cl.³ A61G *13/00*

U.S. Cl. 362—33 **13 Claims**



1. A task lighting apparatus comprising:

(a) a light source installed opposite to a work surface to be illuminated and at intervals of a prescribed distance from the work surface, and including at least a straight tube section which has a central axis and at least a first edge portion and a second edge portion opposite to each other in the longitudinal direction along the central axis;

(b) an elongated housing provided to enclose said light source and having at least an opening at a position opposite to the work surface; and

(c) light-control means provided at the opening of said housing to control most of the beams of light emitted from said light source at least in first and second directions and control the light from said light source so as to maintain the maximum intensity in the first and second directions, said first direction being set in a direction substantially parallel with a first line which is included in a plane including the central axis of the straight tube section of said light source and forming a prescribed vertical angle against the work surface, extends from the first edge portion of the straight tube section, and forms a first angle against the central axis of the straight tube section; and said second direction being set in a direction substantially parallel with a second line which is also included in said plane, crosses the first line, extends from the second edge portion of the straight tube section of said light source, and forms a second angle against the central axis of the straight tube section.

4,368,505

AUTOMOTIVE VEHICLE HEADLIGHT LENS CLEANING DEVICE

Johann Tomforde, Sindelfingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Jun. 30, 1980, Ser. No. 164,815

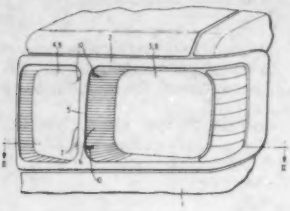
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1979, 2926305

Int. Cl.³ B60Q *1/00*

U.S. Cl. 362—80 **7 Claims**

1. A device for cleaning a lamp arrangement of a motor vehicle, the lamp arrangement including at least two juxtaposed lamps and lens means associated with the respective lamps for covering the same, characterized in that a separating web means is disposed between the two juxtaposed lamps, the separating web means includes two lateral surfaces respectively facing a lens means associated with the lamps, at least

one nozzle means is provided in each of the lateral surfaces, said nozzle means is oriented toward a respective lens means so



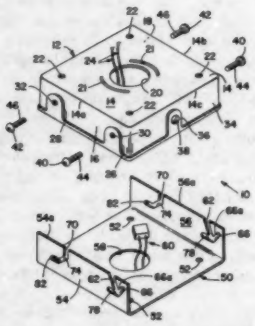
as to enable an emitting of a jet of cleaning fluid on an adjacent lens means.

4,368,506

APPARATUS FOR MOUNTING A LUMINAIRE TO A CEILING

William J. Rapp, Hayward, Calif., assignor to Gardco Manufacturing, Inc., Calif.

Filed Dec. 8, 1980, Ser. No. 214,083
Int. Cl.³ F21S *1/02*
U.S. Cl. 362—147 **17 Claims**



1. In an apparatus for mounting a luminaire to a ceiling including a base having a rectangular plate portion rigidly mounted to the ceiling and a pair of side portions extending downwardly from opposite edges of the plate portion, each side portion of the base having a first post and a second post extending outwardly therefrom and being separated by a first selected distance, and a bracket having means for mounting the luminaire to the bracket and a pair of upwardly extending members adapted for mounting to the side portions of the base by means of said first and second posts extending outwardly therefrom, the improvement in the bracket wherein each of the upwardly extending members of said bracket comprises:

a first slot having an open end disposed at a selected edge of said member for receiving said first post, said first slot extending at an angle to said selected edge of said member;

a second slot communicating with said first slot for receiving said first post from said first slot, said second slot extending at an angle with respect to said first slot to a closed end for rotationally supporting said member about said first post defining a preliminary mounting position;

a third slot with an open end disposed at said selected edge of the member for receiving said second post and spaced by said first selected distance from said closed end of said second slot, said third slot extending at an angle to said selected edge; and

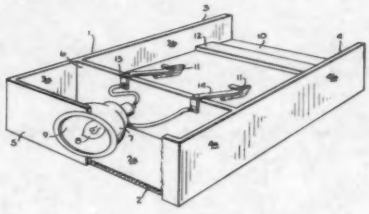
a fourth slot communicating with said third slot for receiving said second post from said third slot and extending at an angle to said third slot to a closed end enabling vertical support of said member on each of said first and second posts in a final mounting position said first and second slots having a spacial relationship to said third slot and said fourth slot preventing said first post from being received into said first slot from said second slot when said second post is received in said third slot or said fourth slot.

4,368,507

FLASHLIGHT

Edward J. Reynolds, 37-10 223rd St., Bayside, N.Y. 11361

Filed Jul. 3, 1979, Ser. No. 54,467
Int. Cl.³ F21L *7/06*
U.S. Cl. 362—200 **5 Claims**



1. A battery-powered flashlight assembly, comprising:

(a) a power source-containing chamber adapted to receive a substantially flat power source containing one or more batteries and comprised of a bottom wall, side walls attached in substantially perpendicular relationship to said bottom wall and a partition wall defining the front of said chamber, said partition wall being attached to at least one of said bottom and side walls;

(b) means attached to the inner surface of at least one of said side walls within said power source-containing chamber for substantially confining a substantially flat power source within said chamber;

(c) a second chamber for containing illuminating means comprised of at least two parallel side walls attached in a substantially perpendicular relationship to said partition wall and a front wall attached to each of said parallel side walls and in a substantially parallel relationship to said partition wall, said front wall containing an aperture for transmission of light therethrough;

(d) illuminating means contained within said second chamber said illuminating means attached to said front wall and positioned behind the aperture in said front wall so as to permit light to emanate from said aperture;

(e) means attached to said partition wall for establishing electrical contact between said illuminating means and exposed terminals of said power source.

4,368,508

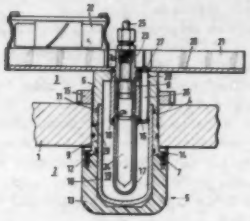
LIGHT FOR SUBMERSIBLE PRESSURE VESSEL WITH COOLING MEANS

Rudolf Gantenbrink, Am Tiergarten 58, 3000 Hannover 73, Fed. Rep. of Germany

Filed Nov. 21, 1980, Ser. No. 209,287
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1979, 2947817
Int. Cl.³ F21V *29/00*
U.S. Cl. 362—267 **23 Claims**

1. A light for a submersible pressure vessel having an interior surrounded by a wall, the light comprising a heat-conducting element inserted in an opening of said wall and extending outside the pressure vessel from said wall; a container sealingly closing said element from the interior of the pressure vessel; a light element positioned in said container and having an electrical connection extended outside the pressure vessel, said con-

tainer including a first bulb and a second bulb peripherally surrounding said light element, said first bulb being spaced from said second bulb to define a cavity therebetween, said cavity being filled with heat-conducting fluid, said heat-conducting fluid being in contact with said heat-conducting element; and cooling means connected to said heat-conducting element, whereby the light is adapted to illuminate the interior of the pressure vessel and dissipate heat at the exterior thereof.



4,368,509

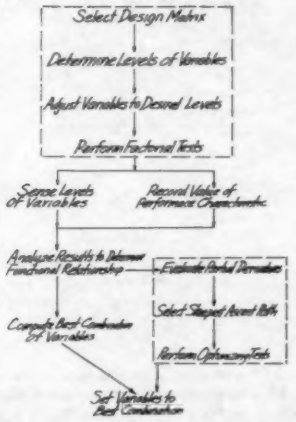
SELF-OPTIMIZING MACHINE AND METHOD

Chou H. Li, 379 Elm Dr., Roslyn, N.Y. 11576

Continuation-in-part of Ser. No. 69,297, Aug. 24, 1979, abandoned. This application Jun. 22, 1981, Ser. No. 275,758

Int. Cl.³ G05B *13/02, 13/04*

U.S. Cl. 364—148 **28 Claims**


Select Design Matrix
Determine Levels of Variables
Adjust Variables to Desired Levels
Perform Factorial Tests
Sense Levels of Variables
Record Value of Performance Characteristic
Analyze Results to Determine Functional Relationship
Evaluate Partial Derivatives
Select Steepest Ascent Path
Compute Best Combination of Variables
Perform Optimizing Tests
Set Variables to Best Combination

1. A method for self-optimizing, in real time, a machine relative to a specific performance characteristic in response to variations on a prescribed number m of variables comprising:

selecting a statistical design which prescribes the number n of tests and the exact design matrix in which the test level of each of the m variables is specified for all the n tests;

according to the design matrix simultaneously sensing and adjusting to their respectively specified test levels all said m variables at a specific time instant;

recording and storing the value of the specific performance characteristic in response to all said m variables at their respective test levels for this specific time instant;

sequentially and repeatedly sensing and adjusting the conditions of all said m variables according to the design matrix at n-1 substantially consecutive time instants within minutes subsequent to said specific time instant;

sequentially and repeatedly recording and storing the n-1 values of the specific performance characteristic in response to all said m variables at their respective levels for the n-1 subsequent, consecutive time instants;

analyzing the n sets of recorded values and combinations of levels of said variables to determine the functional relationship between said variables and said specific performance characteristic;

from the functional relationship determining the singular combination of the conditions of said m variables that gives optimum value for the specific performance characteristic for the particular time instants and condition, environment, and service requirements of the machine; and

setting the conditions or levels of said m variables at their respective, thus-determined conditions.

4,368,510

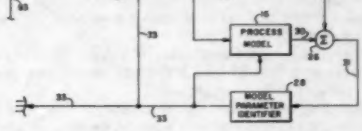
AUTOMATIC IDENTIFICATION SYSTEM FOR SELF TUNING PROCESS CONTROLLER

Paul Anderson, Green Lane, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.

Filed Oct. 20, 1980, Ser. No. 198,801

Int. Cl.³ G05B *13/04, 17/02*

U.S. Cl. 364—151 **12 Claims**



1. In a method for tuning a continuously tunable controller in which the controller parameters are responsive to at least one of a plurality of signal inputs so that said controller sends signals to control a process and supplies an input signal to a model of said process in which said model has parameters which are variable in accordance with the difference between the value of a signal that corresponds to the state of the process and the value of the output signal from process model, wherein signals that correspond to said model parameters are applied to the controller, and the said model parameters are identified by making step changes in the set point of the controller and permitting the process to reach a predetermined portion of the value of said step changes in the set point, the improvement comprising,

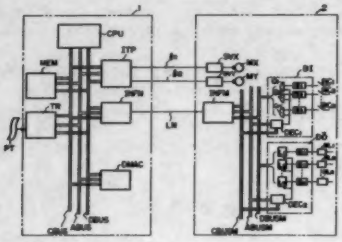
providing a first signal which corresponds to the state of said process at a given time; providing a second signal which corresponds to said set point change; providing means for creating a cycle which includes the steps of adding, ignoring and subtracting said second signal from said first signal during time intervals and applying the resulting signal to said controller whereby said controller varies the input signal to the model of said process; determining the value of the output signal from said process model; and repeating said cycle until the change in the value of said output signal corresponding to at least one of said model parameters from said process model from the previous cycle to the present cycle is less than a predetermined value so that said model parameters are identified automatically.

4,368,511

NUMERICAL CONTROLLING METHOD AND SYSTEM

Ryoji Imazeki, Hachioji, Japan, assignor to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Sep. 2, 1980, Ser. No. 183,038
Claims priority, application Japan, Sep. 4, 1979, 54-113254
Int. Cl.[3] G06F *3/04*; G05B *19/18*; G06F *15/46*
U.S. Cl. 364—167 4 Claims



1. A numerical controlling method for controlling a machine through an exchange of data between said machine and a numerical control apparatus, which method comprises the steps of:

converting, in said numerical control apparatus, parallel data for controlling said machine into serial data;

generating a parallel address signal in said numerical control apparatus, the address signal corresponding to circuitry in said machine which is to be operated by said parallel data;

converting the address signal into a serial address signal in the numerical control apparatus;

transmitting said serial data in a bit-serial manner to said machine;

transmitting said serial address signal with the data to the machine;

converting, in said machine, said serial data to parallel data;

converting, in said machine, said serial address signal to a parallel address signal;

decoding said address signal in said machine; and

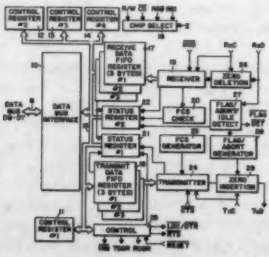
activating said circuitry in accordance with the result of the decoding.

4,368,512

ADVANCED DATA LINK CONTROLLER HAVING A PLURALITY OF MULTI-BIT STATUS REGISTERS

Shikun Kyu, Yokohama, Japan, and Edward C. Hepworth, Chattanooga, Tenn., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 921,012, Jun. 30, 1978, Pat. No. 4,225,919.
This application Mar. 21, 1980, Ser. No. 132,437
Int. Cl.[3] G06F *3/04*
U.S. Cl. 364—200 7 Claims



1. A data link controller in the form of a single integrated circuit chip for controlling data communications between a bidirectional data bus and a communications link and for transmitting and receiving data in serial from in accordance with SDLC, HDLC, and ADCCP bit-oriented protocols, said data link controller comprising:

receiver means for receiving serial data in the form of SDLC, HDLC and ADCCP bit-oriented protocols from said communications link;

transmitter means for transmitting serial data in the form of SDLC, HDLC and ADCCP bit-oriented protocols to said communications link;

control means for controlling the operation of said data link controller; and

means for coupling said bidirectional data bus to a data processing system, wherein the improvement comprises:

a first status register whose contents are loaded by the data link controller with status data in response to said control means for subsequent reading by said data processing system; and

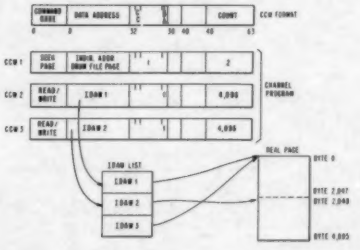
a second status register wherein both the first and second status registers have a plurality of individual locations indicating a different operating condition in either the transmitter means or the receiver means within said data link controller, the first status register being loaded by the data link controller and having a location for indicating whether the second status register requires reading by said data processing system.

4,368,513

PARTIAL ROLL MODE TRANSFER FOR CYCLIC BULK MEMORY

David Meltzer, Wappingers Falls, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Mar. 24, 1980, Ser. No. 133,234
Int. Cl.[3] G06F *7/22*
U.S. Cl. 364—200 17 Claims



1. In a data processing system including a central processing unit (CPU), a main storage, an input-output channel, a control unit and a page-organized cyclic access bulk storage device and means interconnecting in sequence said device, said control unit, said channel and said main storage for exchanging multi-byte page units of data, wherein said channel is adapted for operating under control of programs of chained commands located sequentially in said main storage to control selections of data pages and transfers of selected pages between said device and said main storage without interruption of said CPU, wherein said control unit is adapted for conditionally presenting status modifier signals to said channel in association with signals indicating conclusions of operations relative to said device, and wherein said channel is adapted to conditionally vary its sequence of chained command execution in response to said status modifier signals by modifying a command address used by said channel, said modifying of said address having the effect of causing said channel to skip over the command which otherwise would be next selected for execution, the improvement for effecting reduced latency access to said device comprising:

means in said channel for fetching a first command in a

program of three commands stored in successive address location in said main storage and means in said control unit for locating a page storage area in said device according to said first command,

means in said control unit associated with said page storage area locating means for distinguishing an initial byte location in a first or a second half-page sector of said page area as an optimum starting position for a transfer of a page of data between said page storage area in said device and a page storage area in said main storage,

means in said control unit associated with said sector distinguishing means for presenting either a first or a second combination of concluding signals to said channel depending respectively on whether said distinguishing means has distinguished a byte location in said first or said second half-page sector area of said device as an optimum starting position; one of said first and second combinations including a said status modifier signal and the other of said combinations not including a said status modifier signal; and

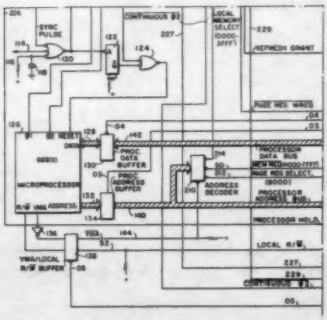
means in said channel responsive to said first or second combination of concluding signals for respectively causing said channel to chain to the second or third command in said program; said second and third commands both specifying page data transfer operations; said second command being located in main storage immediately following said second command; said second command effectively specifying a page transfer operation relative to a page storage area in said main storage having first and second successively located half-page sectors, said transfer operation being effectively defined to start at an initial byte address location within said first half-page sector and proceed progressively through all byte locations in said first and second sectors; said third command effectively specifying the same page storage area and page transfer operation as said second command, but with the transfer effectively defined to start at an initial byte address within the second half-page sector, progress through all byte locations in said second sector, then link to the initial byte location in the first sector, and then progress through all byte locations in the first sector.

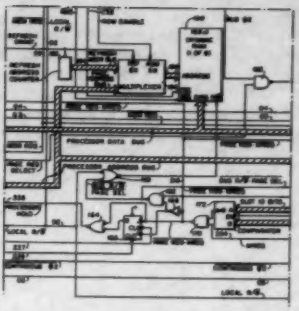
4,368,514

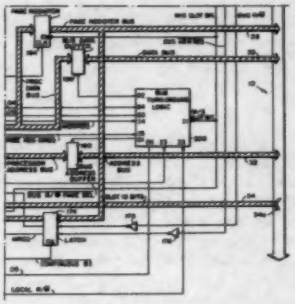
MULTI-PROCESSOR SYSTEM

Ian K. Persaud, Lodi, N.J., and Joseph B. Heinemann, New York, N.Y., assignors to Timeplex, Inc., Rochelle Park, N.J.

Filed Apr. 25, 1980, Ser. No. 143,790
Int. Cl.³ G06F *13/00, 15/16*
U.S. Cl. 364—200 **29 Claims**







1. A data processing system having a master processor and at least two slave processors; a master memory and a plurality of slave memories, with each slave processor having access only to a respective slave memory and with the master processor having access both to the master memory and to all of the slave memories; a common bus shared by all of said processors; each processor having its own address/data bus connecting it to its respective memory, and said master processor and said slave processors having means connected to said common bus for controlling said master processor to transmit address and data signals to said slave memories and for controlling said slave memories to transmit data signals to said master processor; each of said processors including means for generating phase clock signals to enable an access to its respective memory during a respective processor cycle; and control means in said master processor and in each of said slave processors, connected over said common bus, for causing said master processor to synchronize the phase clock signals in each of said slave processors, and at any time to disable the access by any selected slave processor to its respective memory for no longer than the single processor cycle during which said master processor accesses such respective slave memory and said selected slave processor would otherwise access such respective slave memory.

4,368,515

BANK SWITCHABLE MEMORY SYSTEM

Carl J. Nielsen, Saratoga, Calif., assignor to Atari, Inc., Sunnyvale, Calif.

Filed May 7, 1981, Ser. No. 261,301
Int. Cl.³ G06F *9/30*
U.S. Cl. 364—200 **11 Claims**

1. A memory system comprising:

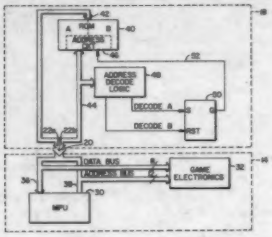
an address bus for providing a plurality of first address signals;

a supplemental address line;

first memory means coupled to the address bus and to the supplemental address line and having a plurality of memory locations for providing digital signals corresponding

to data stored in selected memory locations in response to presence of a second address signal on the supplemental address line, the memory locations being selected in response to first address signals on the address bus;

second memory means coupled to the address bus and to the supplemental address line having a plurality of memory locations for providing digital signals corresponding to data stored in selected memory locations in response to



absence of the second address signal on the supplemental address line, the memory locations selected in response to the first address signals on the address bus; and

decoder means coupled to the address bus and to the supplemental address line for providing the second address signal on the supplemental address line in response to detecting a first combination of address signals on the address bus.

4,368,516

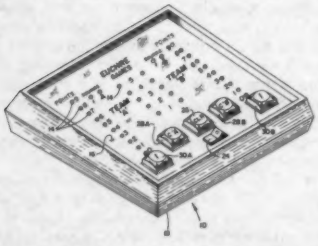
EUCHRE SCORING COMPUTER AND METHOD

Roger W. Morin, 1426 Stag Dr., Fort Wayne, Ind. 46804

Filed Oct. 20, 1980, Ser. No. 199,076

Int. Cl.³ G06F *15/44*

U.S. Cl. 364—411 **20 Claims**



1. A euchre scoring computer comprising:

first and second means for inputting unit point information,

first and second means for totalling said unit point information from said first and second inputting means respectively,

first and second means responsive to said first and second totalling means respectively for generating game point information and zeroing said second and first totalling means respectively,

first and second means responsive to said first and second generating means and said second and first totalling means respectively for establishing skunk point information,

first and second means for displaying said unit, game and skunk point information,

first and second means for resetting said first and second totalling means respectively, and

means for clearing said first and second totalling, generating and establishing means.

4,368,517

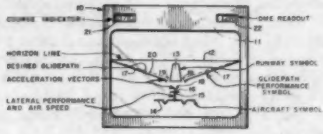
AIRCRAFT LANDING DISPLAY SYSTEM

Peter Lovering, Dayton, Ohio, assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation-in-part of Ser. No. 887,388, Mar. 16, 1978, abandoned. This application Apr. 8, 1980, Ser. No. 138,560

Int. Cl.³ G06F *15/50, 3/153;* G06G *7/78*

U.S. Cl. 364—428 **11 Claims**



1. A system for presenting a cockpit display providing guidance information for landing an aircraft on a runway in conditions of low visibility, comprising:

a display device visible to the pilot;

means for generating on said display device a horizons reference line having a generally fixed horizontal configuration;

means for generating an aircraft symbol on said device, said aircraft symbol having an orientation with respect to said reference line corresponding to the orientation of the aircraft with respect to the actual horizon;

means for generating on said display device a runway symbol having an orientation with respect to the aircraft symbol indicative of the orientation of the actual runway with respect to the aircraft; and

means for generating a generally V-shaped descent profile vector extending from respective sides of the display towards a location on the projected flight path of the aircraft indicative of the projected landing point of the aircraft.

4,368,518

CAGE POSITION DETECTING APPARATUS

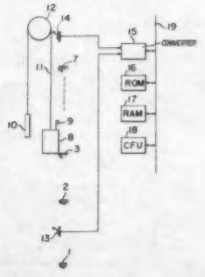
Narihiro Terazono, and Ryuichi Kajiyama, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 11, 1980, Ser. No. 186,128

Claims priority, application Japan, Oct. 9, 1979, 54-130288; Oct. 9, 1979, 54-130289

Int. Cl.³ B66B *3/02;* G06F *15/20*

U.S. Cl. 364—433 **3 Claims**



1. A cage position detecting apparatus for operating the present position of the cage by a computer, an improvement comprising;

an emergency power source for feeding the power in an abnormal state such as the service interruption of the main power source;

a memory device which is actuated by the emergency power source to memorize the present position of the cage;

processing means for operating the data for the present position of the cage to determine the use or nonuse of the data for the position of the cage memorized in the memory device depending upon the condition at the time of the abnormal state;

position detector which is placed in a hatchway to output a signal corresponding to the final floor when the cage is at the final floor;

read only memory memorizing the data for the final floor;

said processing means further processing the data for the final floor in said read only memory corresponding to the final floor as the operated present position when the position detector outputs the signal and determining the use or non-use of the data for the position memorized in said memory device depending upon the condition at the time of the abnormal state;

a running control circuit which allows the running of the cage to the final floor depending upon the determination of the non-use of the data of said memory device by said processing means operating the data, and wherein said processing means for operating the data receives an indication of whether the cage is in an automatic operation or a manual operation at the time of the abnormal state after releasing the abnormal state of the main power source and wherein said processing means receives the data indicating whether the cage is between two floors or is at a floor position to thereby determine whether the cage is running at the time of the abnormal state to determine whether the data of the memory device can be used.

4,368,519

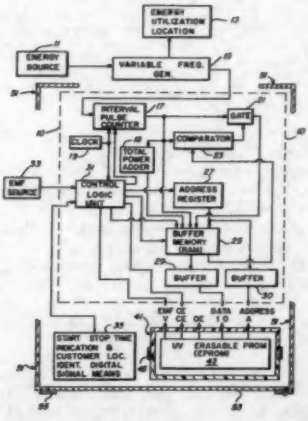
ENERGY UTILIZATION OR CONSUMPTION RECORDING METHOD

Stanley P. Kennedy, Sparks, Md., assignor to Emax, Incorporated, Cockeysville, Md.

Division of Ser. No. 31,848, Apr. 20, 1979, Pat. No. 4,236,217. This application Aug. 4, 1980, Ser. No. 174,854

Int. Cl.³ G01D *9/00*

U.S. Cl. 364—483 **35 Claims**



1. The method of recording the amounts of energy utilized or consumed at a given location or facility, comprising

transmitting discrete count signals varying in rate as a function of the rate of energy use,

counting the quantity of said discrete count signals during succeeding discrete time intervals to produce succeeding interval summation count value digital signals,

recording said succeeding interval summation digital count value digital signals at discrete individual locations in a record medium for subsequent read-out,

comparing said succeeding interval summation count value digital signals,

said comparing being effected by successively comparing each succeeding said interval summation count value signal with the then highest of the preceding said interval summation count value signals for each of the preceding discrete intervals of said given time period,

recording idicia, in digital form, representing peak interval summation digital count value, at a respective discrete location on said record medium, the highest of said interval summation digital count values occurring during a given total recording period composed of a plurality of said succeeding time intervals,

summing the interval summation digital count values represented by said interval summation count value digital signals over said given total recording period to thereby provide a grand total energy or power utilization or consumption digital value for said given total recording period,

and recording said grand total energy or power utilization or consumption value as a digital signal at a respective discrete location in said record medium.

4,368,520

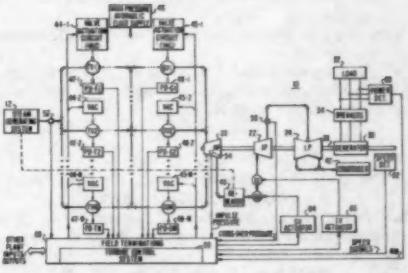
STEAM TURBINE GENERATOR CONTROL SYSTEM

Eddie Y. Hwang, Nether Providence; Andras I. Szabo, Export, and Louis G. Ottobre, Murrysville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 29, 1980, Ser. No. 191,606

Int. Cl.³ G06F *15/46;* **G05B** *15/00;* **F01D** *17/02*

U.S. Cl. 364—494 **36 Claims**



1. A control system for a steam turbine operative to drive an electric generator and having a plurality of steam admission valves which are controllable in position to determine the operating level of the turbine, comprising:

(A) a controller including programmable digital computer means operable to receive and store input target set point signals and being responsive to said signals to generate a plurality of digital valve control signals;

(B) each said steam admission valve including a valve actuation circuit operable, in response to a valve position control signal, to position the valve so as to control its degree of opening;

(C) position detection means coupled to each said valve to provide respective feedback signals indicative of valve position;

(D) a plurality of valve position control circuits each including programmable digital computer means operable to receive and store a respective one of said digital valve control signals as well as a respective one of said feedback signals and being responsive to said digital valve control and feedback signals to generate a respective one of said valve position control signals; and

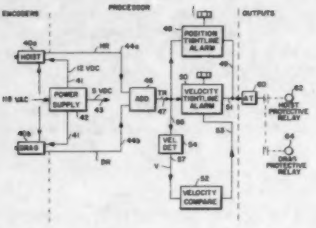
(E) said programmable digital computer means of said valve position control circuit being additionally operable to

transmit selected stored digital information back to said controller.

4,368,521
METHOD AND APPARATUS FOR DRAGLINE TIGHTLINE PROTECTION

John T. Sholes, II, Marion, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Sep. 30, 1980, Ser. No. 192,646
Int. Cl.³ G06F *15/20;* E02F *3/46*
U.S. Cl. 364—506 **9 Claims**



1. A method of preventing tightline condition in a dragline or the like, comprising the steps of:

sensing the amount of hoist rope paid out from a hoist drum,

sensing the amount of drag rope paid out by a drag drum,

adding the values of the sensed amounts of drag and hoise rope paid out to produce a sum signal having a value corresponding to the sum of the values of hoist and drag rope paid out,

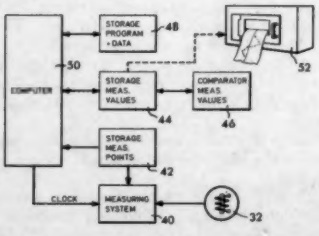
comparing the value of said sum signal with a predetermined constant and

halting dragline operation when the result of said comparing step is that said sum signal is of a value less than said predetermined constant.

4,368,522
METHOD OF MEASURING ERRORS IN THE TRUTH OF ROTATION OF A GEAR

Hans Späth, Kloten, and Meinrad Donner, Nuolen, both of Switzerland, assignors to Maag Gear-Wheel & Machine Co. Ltd., Zurich, Switzerland

Filed Sep. 15, 1980, Ser. No. 187,598
Claims priority, application Switzerland, Oct. 5, 1979, 8990/79
Int. Cl.³ G06F *15/36*
U.S. Cl. 364—550 **2 Claims**



1. In a method of measuring errors in the truth of rotation of the gear teeth of a gear arising during gear fabrication by means of a measuring device having a feeler guide which is pivotable about a pivot axis extending substantially parallel to the gear axis and guides a feeler which is pre-biased in the direction of the gear, cyclically engages into the gear teeth while the gear rotates, wherein the feeler together with the feeler guide is pivotable about its pivot axis and is displaced back in relation to the feeler guide, there being provided an electronic circuit for determining during each measuring cycle the greatest rearward displacement of the feeler in that it stores signals delivered by the feeler and compares such stored signals with one another, the improvement which comprises the steps of;

(a) during each measuring cycle forming from a number of signals delivered by the feeler as well as a number of subsequently delivered signals a respective mean value;

(b) comparing both mean values with one another;

(c) storing the larger of the mean values provided that it constitutes the mean value formed from the subsequently delivered signal;

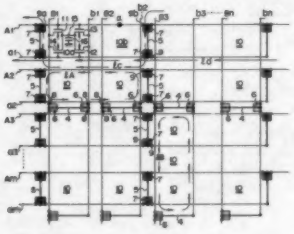
(d) repeating operations (a) to (c) for such length of time until there is formed a mean value which is smaller than the directly precedingly formed mean value; and

(e) thereafter delivering the precedingly formed mean value as the maximum value of the related measuring cycle.

4,368,523
LIQUID CRYSTAL DISPLAY DEVICE HAVING REDUNDANT PAIRS OF ADDRESS BUSES

Keiichi Kawate, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Dec. 16, 1980, Ser. No. 217,093
Claims priority, application Japan, Dec. 20, 1979, 54-164803; Apr. 25, 1980, 55-55036; Apr. 25, 1980, 55-55037; Apr. 25, 1980, 55-55041
Int. Cl.³ G11C *5/06, 8/02, 11/24;* H04N *5/74*
U.S. Cl. 365—63 **43 Claims**



1. A memory device comprising:

(a) a plurality of memory cells arranged in a matrix form;

(b) paired address buses connected to said memory cells and forming respective rows of said matrix;

(c) data buses connected to said memory cells and forming respective columns of said matrix; and

(d) bridge means formed in said paired address buses for connecting one with the other of said paired address buses.

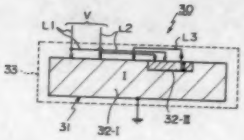
4,368,524
SEMICONDUCTOR DEVICE

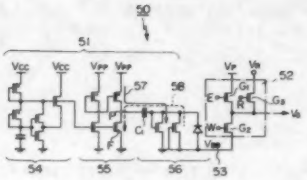
Kazuhisa Nakamura, San Jose, Calif., and Hideki Arakawa, Yokohama, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 18, 1980, Ser. No. 170,175
Claims priority, application Japan, Jul. 26, 1979, 54-95348
Int. Cl.³ G11C *7/00*
U.S. Cl. 365—226 **8 Claims**

1. A semiconductor device comprising electrically alterable read-only memory cells formed in and on a silicon substrate, each of said read-only memory cells includes a control gate to which a first voltage having one polarity and a second voltage having an opposite polarity are selectively applied, the silicon substrate has a first block and a second block, each of which

blocks is electrically insulated from the other block, wherein the first block contains therein said read-only memories being driven by said first voltage and said second voltage, which first voltage is supplied from an external voltage source, said sec-





ond block contains therein a bipolar voltage generator being driven by said first voltage of said external voltage source but producing at least said second voltage to be applied to specified one or more said control gates.

4,368,525

VIBRATION DETECTOR

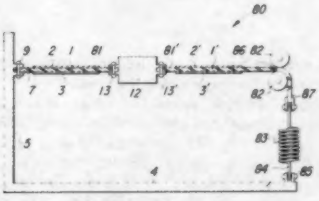
Sukiro Obata, Tokyo; Naohiro Murayama, Iwaki, and Teruo Fujii, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Nihonbashi, Japan

Filed Jul. 3, 1980, Ser. No. 165,802

Claims priority, application Japan, Jul. 11, 1979, 54-88547; Mar. 26, 1980, 55-38622

Int. Cl.³ H04R *17/00*

U.S. Cl. 367—165 **16 Claims**



1. A vibration detector for a seismic system comprising:

a weight member,

a support frame,

at least two weight supporting members, each of said supporting members being fixed to said weight member at one end thereof and being substantially fixed to said support frame at one portion thereof in detecting the vibration, and

a means for substantially fixing said one portion to said support frame in detecting the vibration,

wherein said support frame comprises a means for keeping said supporting member in tensile stress so as to support said weight member vibratively and a means for supporting said means for keeping the supporting member in tensile stress, said weight member is vibratively supported by tension of said supporting members, and at least a part of one of said supporting members is formed by a piezoelectric polymeric substance having a pair of vibration detecting electrodes deposited on a part of each surface of the piezoelectric polymeric substance, the part being at a position between the fixed ends of the supporting member.

4,368,526

SERVO CONTROL SYSTEM FOR OPTICAL SYSTEM WHICH FOCUSES A CONVERGING LIGHT BEAM ON A RECORDING DISC

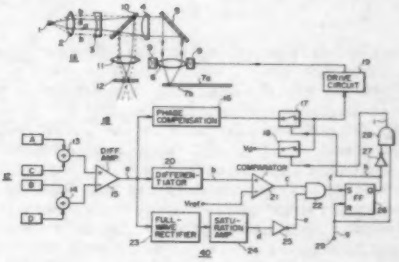
Shunji Harigae, Neyagawa; Tomio Yoshida, Katano; Yoshinobu Nakata; Michiyoshi Nagashima, both of Ikoma, and Toshio Sato, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Dec. 23, 1980, Ser. No. 229,313

Claims priority, application Japan, Dec. 28, 1979, 54-172558

Int. Cl.³ G11B *7/12*

U.S. Cl. 369—45 **8 Claims**



1. A servo control system for an optical system which focuses a converging light beam on a recording disc having a layer of transparent material with a first plane facing toward said beam and a second plane spaced from said first plane, wherein information is recorded on said second plane, comprising:

first means for detecting light reflected from said first or second plane;

second means for deriving from said detected light an error signal representing the displacement of the focus point of said light beam from either one of said first and second planes;

a driving mechanism for moving said optical system in a direction toward said disc, whereby said error signal includes first and second successive peaks which occur on one side of a zero crossing level when said converging light beam is made to focus successively on said first and second planes;

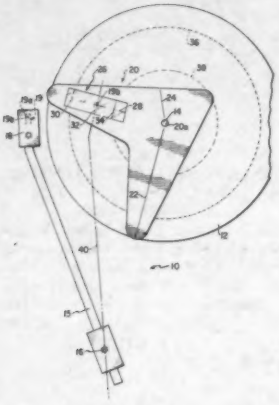
third means for detecting when said error signal reaches a point substantially at or near the zero crossing point which occurs immediately following said second peak; and

fourth means for operating said driving mechanism in an open loop mode to cause said optical system to move toward said disc until the time said zero crossing point is detected and subsequently operating said driving mechanism in a closed loop mode in accordance with said error signal to allow said converging beam to focus on said second plane.

4,368,527
PHONOGRAPH CARTRIDGE ALIGNMENT

Michael J. Goldstein, 44 Seacord Rd., New Rochelle, N.Y. 10804

Filed Nov. 23, 1979, Ser. No. 96,695
Int. Cl.³ G11B 3/10
U.S. Cl. 369—55 15 Claims



1. A method for use with a phonograph of the type incorporating a turntable adapted to have a record disc rested thereon for rotation about a first axis, a tone arm mounted near one of its ends for pivotal movement about a second axis and a cartridge mounted at the other end of said tone arm and having a stylus assembly with a stylus depending therefrom, said method being used for adjusting the overhang of said stylus in a procedure for aligning said cartridge with respect to said tone arm and turntable so as to minimize horizontal tracking error, said method comprising the step of adjusting at least one of said cartridge and said tone arm to make said stylus overlie a fixed point, said fixed point lying in a plane perpendicular to said axis at substantially a distance from said first axis defined by the equation:

$$d = \sqrt{L^2 - (L - O)^2}$$

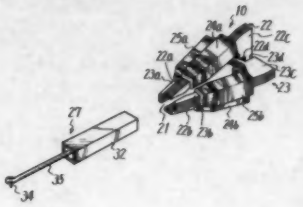
where L is the effective tone arm length and O is the stylus overhang beyond said second axis which minimizes tracking error for a tone arm of that length.

4,368,528
PICKUP CARTRIDGE

Akio Sakano; Kunio Shikakura, both of Tokyo; Hideshi Tamaru, and Kimiyoshi Yoshida, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 26, 1980, Ser. No. 190,976
Claims priority, application Japan, Oct. 12, 1979, 54-132168
Int. Cl.³ H04R 11/12
U.S. Cl. 369—136 8 Claims

1. In a pickup cartridge having first and second jointless cores, each consisting of a pair of leg members which are connected by a short core member, said first and second jointless cores being connected so as to make a right angle with each other at their respective short core members, coils mounted around each of the leg members, and a cantiliver having a permanent magnet inserted into an air gap formed by adjacent free end portions of said leg members, said pair of leg members of each of said first and second cores being arranged so as to oppose each other and the spacing between each said pair of leg members becoming successively narrow toward the

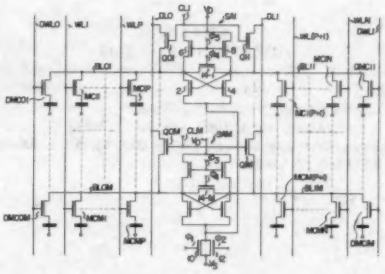


direction of the free end thereof, and said coils being inserted through said air gap and fixed on said each leg member.

4,368,529
SEMICONDUCTOR MEMORY CIRCUIT

Tohru Furuyama, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Oct. 17, 1980, Ser. No. 197,950
Claims priority, application Japan, Oct. 23, 1979, 54-136632
Int. Cl.³ G11C 11/40
U.S. Cl. 365—205 16 Claims

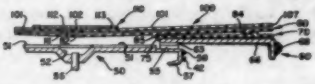


1. A semiconductor memory circuit comprising:
first and second voltage supply terminals;
at least one flip-flop circuit including first and second switching means, first and second bi-stable output terminals connected through respective ones of said first and second switching means to said first voltage supply terminal, and first and second MOS transistors having drains connected to respective ones of said bi-stable output terminals and having sources connected to each other;
paired bit lines directly connected to respective ones of said first and second bi-stable output terminals of said at least one flip-flop circuit;
a plurality of semiconductor memory cells connected to each of said bit lines;
a discharging circuit connected between said second voltage supply terminal and each of the sources of said first and second MOS transistors of said at least one flip-flop circuit; and
means connected to said paired bit lines for setting and maintaining between read operations the potentials on said paired bit lines to a voltage level substantially midway between the levels of voltages of said first and second voltage supply terminals.

4,368,530
ACOUSTIC DAMPENING ASSEMBLY FOR RECORD PLAYER TURNTABLE

Tom A. Darnall, Jr., Rte. 6, Box 404, Buckhannon, W. Va. 26201

Continuation of Ser. No. 904,788, May 11, 1978, Pat. No. 4,202,551. This application May 9, 1980, Ser. No. 148,292
The portion of the term of this patent subsequent to May 13, 1997, has been disclaimed.
Int. Cl.³ G11B *3/60*
U.S. Cl. 369—264 **3 Claims**



1. In a turntable having a spindle, a motor, an outer platter having a top surface, a lower surface, an aperture, and a circular side, an inner platter having an inner top surface, a peripheral top surface, and a periphery, a platter support plate, and a mounting support plate, said platter support plate being shock-absorbingly attached to and supported by said mounting support plate, the improvement comprising a inner platter decoupling assembly which comprises:

A. a plurality of layers of energy absorbing material on said inner top surface;

B. a plurality of frequency-absorbing sandwich cushions which are disposed on said peripheral top surface for supporting the weight of said outer platter thereupon, and for absorbing vibrations being transmitted between said inner and outer platters;

C. a layer of energy absorbing material on said lower surface; and

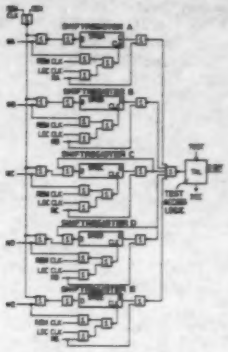
D. a circumannular compressor which is tensionally disposed around said circular side to create strong radially directed forces that serve to absorb, diminish, and deaden the acoustical and mechanical feedback that travels through said inner platter during play of a record on said turntable.

4,368,531
FRAME ALIGNER FOR DIGITAL TELECOMMUNICATIONS EXCHANGE SYSTEM

Geoffrey Chopping, Poole, England, assignor to The Plessey Company Limited, Ilford, England

Filed Aug. 6, 1980, Ser. No. 175,780
Claims priority, application United Kingdom, Oct. 10, 1979, 7927859
Int. Cl.³ H04J *3/06*
U.S. Cl. 370—100 **6 Claims**

1. A frame aligner for use in a time division multiplex communication system in which a digital data bit stream is transmitted over a data highway interconnecting a first communication exchange and a second communication exchange, each exchange incorporating its own individually operating clock arrangement for defining time division multiplex frame and bit periods within a frame and the frame aligner includes five half frame shift register sections, each section being independently accessible for read and write operations, a read select counter arranged to select on a mutually exclusive basis the shift register section from which the next half frame of information is to be read, a write select counter arranged to select on a mutually exclusive basis the shift register section into which the next half frame of information received on the data highway is to be fed and a slip mechanism which monitors the incoming clock and the exchange clock and controls the read select and write

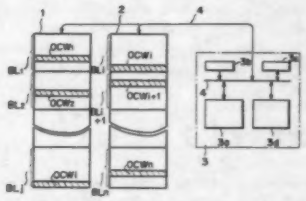


select counters so that they do not concurrently select the same shift register section.

4,368,532
MEMORY CHECKING METHOD

Ryoji Imazeki, Hachioji, and Michiya Inoue, Hino, both of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Jul. 30, 1980, Ser. No. 173,726
Claims priority, application Japan, Aug. 1, 1979, 54-98268
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—21 **9 Claims**



1. A method of checking a read only memory in a computer system, the read only memory storing at least one logical block composed of a plurality of words, the computer system having a processor for reading data from the read only memory, for performing a prescribed operation, and for checking the read only memory, said method comprising the steps of:

(a) determining an operational control word in such a manner as to render the result of the prescribed operation equivalent to a predetermined value;

(b) storing the operational control word in said at least one logical block stored in the read only memory;

(c) sequentially reading each of the plurality of words in said at least one logical block;

(d) sequentially subjecting each of the plurality of words in said at least one logical block to the prescribed operation by employing the processor;

(e) comparing the result of the prescribed operation, after each of the plurality of words has been subjected to the prescribed operation, with the predetermined value; and

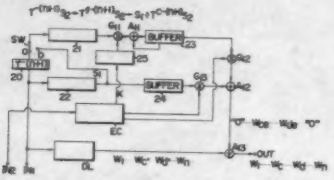
(f) determining whether the read only memory is operating normally on the basis of the comparison result.

4,368,533

ERROR DATA CORRECTING SYSTEM

Tadashi Kojima, Yokosuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Apr. 28, 1980, Ser. No. 144,521
Claims priority, application Japan, May 10, 1979, 54-57417
Int. Cl.³ G06F 11/10
U.S. Cl. 371—37 5 Claims



1. An error data correcting system in which a series of n data words W_1 through W_n each including m bits has associated therewith a P check code

$$\left(P \oplus \sum_{r=1}^{n} W_r = 0\right)$$

and a Q check code

$$\left(Q \oplus \sum_{r=1}^{n} T^{(n+1)-r} W_r = 0\right),$$

the system for correcting erroneous data words W_c and W_d to produce correct data words W_c and W_d ($1 \leqq c < d \leqq n$), the system generating a first syndrome value

$$S_1 = P \oplus \sum_{r=1}^{n} W_2 \neq 0$$

and a second syndrome value

$$S_2 = Q \oplus \sum_{r=1}^{n} T^{(n+1)-r} W_r \neq 0$$

when the series of data words includes erroneous data words $W_{c'}$ and $W_{d'}$, respectively, the system comprising:

a first input terminal for receiving said series of data words and said associated first and second syndrome values;

an auxiliary matrix circuit for multiplying said first syndrome value by an auxiliary matrix $T^{-(n+1)}$;

a T matrix operation circuit for receiving the output of said auxiliary matrix circuit and for shifting said received value c positions to output $T^{c-(n+1)} S_2$;

a P register coupled to said first input terminal for receiving said first syndrome value;

switch means for selectively coupling the output of said P register to the input of said T matrix operation circuit to cause said T matrix operation circuit to store $S_1 + T^{c-(n+1)} S_2$;

a second input terminal for receiving an error data pointer;

an error word control circuit coupled to said second input terminal for generating an interval signal $k = d - c$ corresponding to the series positional difference between said second error word $W_{d'}$ and said first error word $W_{c'}$ in response to said error data pointer;

a first gate circuit coupled to the output of said T matrix operation circuit;

a matrix generating circuit for receiving said interval signal k from said error word control circuit, for generating a matrix signal corresponding to a specific bit in the output of said T matrix operation circuit, and for supplying said matrix signal to said first gate circuit, said first gate circuit for combining said output of said T matrix operation circuit $(T^{c-(n+1)} S_2$ with said matrix signal k to generate a second corrected data word W_{dc};

a first buffer for storing said second corrected data word W_{dc};

a second buffer coupled to said P register for receiving and storing said first syndrome value S_1; and

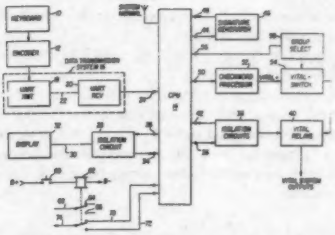
means coupled to said first buffer for receiving said second corrected data word W_{dc} and to said second buffer for receiving said first syndrome value S_1 and for combining said second corrected data word W_{dc} and said first syndrome value S_1 to generate a first corrected data word W_{cc}.

4,368,534

KEYBOARD CONTROLLED VITAL DIGITAL COMMUNICATION SYSTEM

Henry C. Sibley, Adams Basin, N.Y., assignor to General Signal Corporation, Stamford, Conn.

Continuation of Ser. No. 7,184, Jan. 29, 1979, abandoned. This application Jun. 9, 1980, Ser. No. 157,658
Int. Cl.³ G06F 11/08
U.S. Cl. 371—53 16 Claims



1. A vital digital control system with keyboard inputs for activating at least one output device in response to a manual keyboard selection of a sequence of a predetermined number of operation instructions, comprising:

keyboard encoder means for generating the operation instructions in the form of multi-digit keyboard words;

vital decoding means coupled to said keyboard encoding means for identifying said keyboard words and for producing message words, diverse output words and diverse display words based on said keyboard words, and display echo words based on said display words;

display means coupled to said decoding means for displaying a representation of said display words;

said vital decoding means including means for sequentially producing diverse multi-bit checkwords based on predetermined words generated by said system indicative of system performance, said predetermined words including said message words, said display words, and said display echo words in response to receipt of said keyboard words, and means for checking that successive of said checkwords are diverse, said checking means including,

means for comparing each generated checkword to a predetermined constant multi-bit pattern, and for producing a validation signal if sequential ones of said checkwords are complementary and corresponding to said constant multi-bit pattern, said vital decoding means activating the output device in accordance with the keyboard instructions only if said validation signal is produced.

4,368,535
TOMOGRAPH FOR PRODUCING TRANSVERSE LAYER IMAGES

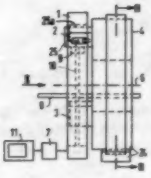
Heinz Baumann, Buckenhof, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 233,385, Feb. 11, 1981, abandoned, which is a continuation of Ser. No. 948,426, Oct. 4, 1978, abandoned. This application Dec. 11, 1981, Ser. No. 329,656

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1977, 2750551

Int. Cl.³ H05G *1/10*

U.S. Cl. 378—15 **1 Claim**



1. In a tomographic apparatus for producing transverse layer images of an exposure subject having a stationary source of energy, an X-ray tube adapted to produce, when energized, an X-ray beam capable of penetrating the exposure subject, the cross-sectional extent of the X-ray beam perpendicular to the layer plane is the same as the layer thickness, a radiation receiver which senses the radiation intensity behind the subject by scanning the projected X-ray beam, a rotatable frame for rotating the X-ray tube in the layer plane to scan the exposure subject from different directions and a measured value converter to transform the signals delivered by the radiation receiver into a layer image, an improvement including an oil filled tank affixed to the rotatable frame, said oil filled tank includes means for generating high voltage, said means for generating includes a low voltage input and a high voltage output, said high voltage output is connected to a cathode of the X-ray tube and an anode of the X-ray tube is connected to ground potential, rotating current coupling means adapted to continuously, electrically, connect said low voltage input of said means for generating high voltage to the stationary source of energy as the rotatable frame is being rapidly rotated about the exposure subject thereby continuously providing energy to said means for generating such that the X-ray tube may be energized while the frame is being rotated through an angle of 360° in order to minimize exposure time, wherein the radiation receiver has a toroidal shape with an interior cylindrical surface and the axis of rotation of the rotatable frame corresponds to an axis of symmetry of the radiation receiver, said improvement comprising further,

a housing for the X-ray tube, said housing is affixed to the frame and is adapted to support the X-ray tube with an anode side of the X-ray tube located adjacent an end of said housing and with a side wall of said housing positioned adjacent to and radially inwardly from the interior cylindrical surface of the radiation receiver, a grounded wire connected to said anode is positioned along an interior surface of said side wall such that said X-ray tube can be located relatively close to an adjacent region of the interior cylindrical surface of the radiation receiver.

4,368,536
DIAGNOSTIC RADIOLOGY APPARATUS FOR PRODUCING LAYER IMAGES

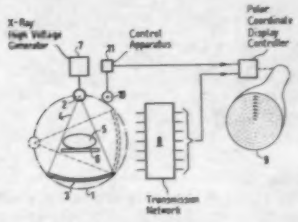
Manfred Pfeiler, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 19, 1980, Ser. No. 208,437

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1979, 2950819

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—19 **1 Claim**



1. Diagnostic radiology apparatus for producing layer images of a radiography subject, comprising a patient support, a measuring arrangement for irradiating the radiography subject from various directions, comprised of a radiation source (2) which emits a fan-shaped radiation beam penetrating the layer to be examined, whose dimension perpendicular to the layer plane is approximately equal to the layer thickness, and of a radiation receiver (3) formed of a series of detectors, which delivers electric output signals corresponding to the measured radiation intensity, a rotating frame (1) on which the radiation source and the radiation receiver are mounted, and a transmission network (8) with a video unit (9) for converting the output signals of the radiation receiver into an image of the examined layer, the video unit (9) being operable with a polar coordinate system in which a number of concentric image point circles are written, each of which is locally allocated, via the transmission network (8), to a specific detector in the radiation receiver (3) and is modulated in its intensity largely corresponding to the output signal of the associated detector, and means (11) for synchronizing the recording operation of the video unit with the scanning movement of the measuring arrangement (2, 3) such that the circles are completely recorded when a scan cycle is terminated.

4,368,537
X-RAY DIAGNOSTIC GENERATOR IN WHICH THE X-RAY TUBE VOLTAGE IS ADJUSTED VIA THE X-RAY TUBE CURRENT

Heribert Amtmann, Langensendelbach; Hermann Forkel, Buckenhof, and Hans-Jürgen Gerlach, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 26, 1981, Ser. No. 247,840

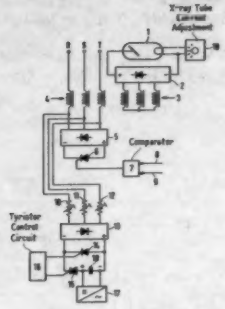
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1980, 3015039

Int. Cl.³ H05G *1/32*

U.S. Cl. 378—112 **1 Claim**

1. An x-ray diagnostic generator comprising an x-ray tube whose voltage is adjustable via means for adjusting the x-ray tube filament current, power supply means having series resistance means in a power supply path between the mains and the x-ray tube for determining the relationship between x-ray tube voltage and x-ray tube current, means for switching the x-ray tube on and off, characterized by a switching device (5, 6), for the purpose of by-passng the series resistance means (10, 11, 12), and characterized in that a comparator (7) controls the switching device (5, 6), said comparator (7) having respective inputs for receiving an actual value signal and a setpoint signal

in accordance with an actual value and a setpoint value for the x-ray tube voltage, and said comparator (7) controlling said



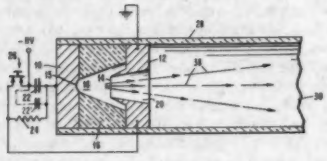
switching device (5, 6) such that the series resistance means (10, 11, 12) is by-passed at the commencement of a radiograph as long as the actual value is smaller than the setpoint value.

4,368,538

SPOT FOCUS FLASH X-RAY SOURCE

Richard A. McCorkle, South Salem, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 11, 1980, Ser. No. 139,931
Int. Cl.³ H05G *1/00*
U.S. Cl. 378—122 **11 Claims**



1. A flash X-ray source comprising:
an anode;
a cathode with a protrusion thereon;
an insulating body having a passage therethrough which is symmetrically disposed and axially aligned with said protrusion on said cathode, said insulating body being positioned between said anode and said cathode;
at least one viewing port for said passage; and
means for maintaining a potential between said anode and said cathode.

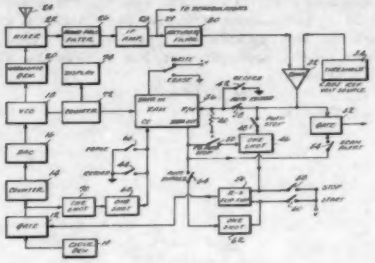
4,368,539

TRANSMITTER DETECTOR

Glenn H. Whidden, 13214 L'Enfant Dr., Oxon Hill, Md. 20022

Filed Aug. 22, 1980, Ser. No. 180,484
Int. Cl.³ H03J *7/18*; H04B *17/00, 1/16*
U.S. Cl. 455—166 **31 Claims**

7. A method of detecting the presence of a transmitter in an area to be secured from transmitters comprising the steps of:
(a) generating a scanning signal consisting of frequency components related to a base frequency;
(b) combining said scanning signal with input signals to generate mixed signals;
(c) selectively amplifying a particular frequency band of said mixed signals;
(d) determining whether said amplified mixed signals exceed a predetermined threshold;
(e) storing an indication in a memory at an address related to said base frequency of said amplified mixed signals which exceed said predetermined threshold;
(f) analyzing said amplified mixed signals which exceed said predetermined threshold to determine whether the data was transmitted from a transmitter in said area;



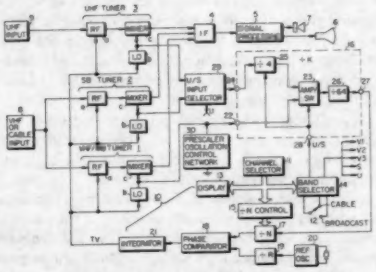
(g) incrementally varying the frequency of said base frequency; and
(h) repeating said steps (a)–(g) bypassing said frequencies which said analyzing step determines contains data transmitted from outside said area on subsequent ones of said determinating steps.

4,368,540

PHASE LOCKED LOOP TUNING SYSTEM INCLUDING A PRESCALER CONDITIONED TO OSCILLATE AT AN OUT-OF-BAND FREQUENCY

David J. Carlson, and William L. Lehmann, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 5, 1981, Ser. No. 271,742
Int. Cl.³ H03L *7/18*; H04B *1/26*
U.S. Cl. 455—180 **9 Claims**



1. In a tuning system for tuning a receiver to a selected one of a plurality of channels in a predetermined range of frequencies, apparatus comprising:
local oscillator means for generating a local oscillator signal and controlling its frequency in response to the magnitude of a tuning signal;
prescaler means for dividing the frequency of said local oscillator signal by a predetermined factor to generate a frequency divided signal;
control means responsive to said frequency divided signal for generating said tuning signal and controlling its magnitude until said frequency divided signal has a predetermined frequency corresponding to a selected channel;
said prescaler means being susceptible of self-oscillation at a self-oscillation frequency and thereby generating a frequency divided signal having a frequency corresponding to that of one of said channels when said local oscillator signal has an amplitude below a predetermined threshold;

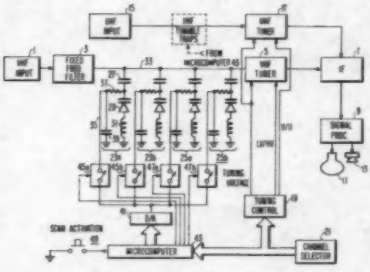
frequency selective means coupled to said prescaler means for tuning said self-oscillation frequency to a predetermined frequency such that said frequency of said frequency divided signal produced in response to said self-oscillation does not correspond to that produced in response to the local oscillator frequency of any channel in said range.

4,368,541

MULTIPLEXING ARRANGEMENT FOR A PLURALITY OF VOLTAGE CONTROLLED FILTERS

Robert M. Evans, Fox Hunt Rd., Ringoes, N.J. 08551

Filed Jun. 30, 1980, Ser. No. 164,684
Int. Cl.³ H04B 1/16; H03J 5/24
U.S. Cl. 455—186 **14 Claims**



1. In a receiver including channel selection means for selecting one of a plurality of channels associated with respective RF carriers modulated with information, an input for receiving said RF signals, conversion means for producing an information bearing signal in accordance with the modulation of the RF carrier associated with the selected channel, and an output at which said information bearing signal is produced, apparatus comprising:

a plurality of frequency tunable circuits coupled between said input and said output and cooperating to control the frequency characteristics of said receiver between said input and output;

each of said frequency tunable circuits including a reactive element having a reactive value determined by the magnitude of a respective analog control signal; storage means coupled to said reactive means for storing said control signal; and a control input for receiving said respective control signal; each of said control inputs being substantially electrically isolated from the other ones of said control inputs;

digital to analog converter means for generating said control signals in response to the application of respective digital control words;

switch means for sequentially and individually applying said control signals generated by said digital to analog converter means to respective ones of said control inputs; and

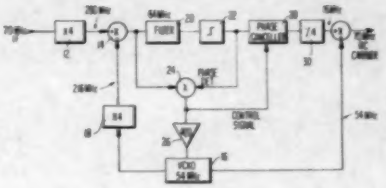
control means for sequentially supplying said digital control words to said digital to analog converter means to thus sequentially generate respective ones of said control signals and causing said switch means to synchronously and individually apply said sequentially generated control signals to respective ones of said control inputs while a single one of said channels is selected.

4,368,542

PHASE CANCELLER FOR CARRIER RECOVERY NETWORK

Vasil Uzunoglu, Ellicott City, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Mar. 27, 1980, Ser. No. 134,735
Int. Cl.³ H04B 1/16
U.S. Cl. 455—316 **7 Claims**



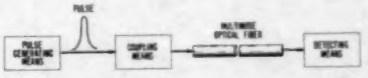
1. A carrier recovery network comprising, an input section receiving an input signal including a carrier, automatic frequency control loop means receiving said input signal and eliminating frequency variations in said input signal, said automatic frequency control loop means including a phase detector and a band pass filter, semiconductor phase cancelling means responsive to the output of said automatic frequency control loop means and receiving a control signal from said phase detector to cancel phase shifts in a signal associated with said band pass filter, and output means responsive to an output signal from said semiconductor phase cancelling means to recover said carrier from said input signal.

4,368,543

MULTIMODE FIBER LIGHTWAVE COMMUNICATION SYSTEM UTILIZING PULSE SELF-CONFINEMENT

Akira Hasegawa, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 2, 1981, Ser. No. 230,322
Int. Cl.³ H04B 9/00
U.S. Cl. 455—612 **3 Claims**



1. A multimode fiber lightwave communication system using pulses of electromagnetic radiation of center frequency f_o and group velocity v_o, the system comprising

(a) means for generating the pulse with f_o such that $(\partial v_{gj}/\partial k_j)>0$ in the guiding region of the fiber, and

(b) means for coupling at least a part of the energy in the pulse into the guiding region of the fiber,

CHARACTERIZED IN THAT

(c) the electric field of the pulse in the guiding region satisfies

$$\left(\frac{v_{gj}-v_o}{v_{gj}}\right)^2 \leq 2\left(\frac{\partial v_{gj}}{\partial f_o}\,\frac{f_o}{v_{gj}}\right)\frac{\alpha n_2}{n_o}\,|\Phi|^2$$

for at least one mode of mode number j, wherein

v_{gj} is the group velocity of the j-th mode,

k_j is the wavenumber of the j-th mode,

n_o is the field-independent effective refractive index of the fiber at f_o,

n_2 is the quadratic coefficient of the refractive index of the fiber at f_o,

$|\Phi|$ is the absolute magnitude of the peak electric field in the pulse averaged over the cross-section of the guiding region, and

α is a constant approximately equal to $\frac{1}{4}$.

DESIGN PATENTS

GRANTED JAN. 11, 1983

ERRATA

For CLASS	See PATENT NO.
D23–138	267,539

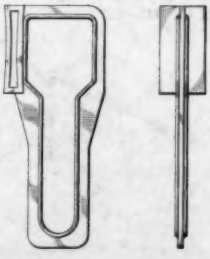
DESIGNS

JANUARY 11, 1983

267,518
HAT
Thomas Chritton, 6509 Tottenham Dr., Madison, Wis. 53711
Filed Aug. 5, 1980, Ser. No. 175,486
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—251

267,520
DEVICE FOR LIFTING AND CARRYING ROLLS OF SHEET MATERIAL
Thomas H. Main, Lake Oswego, Oreg., assignor to Crown Zellerbach Corporation, San Francisco, Calif.
Filed Dec. 22, 1980, Ser. No. 219,392
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D3—30.1

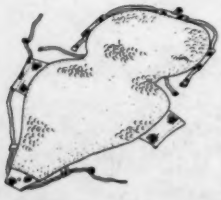
267,519
BELT MOUNTED GAME CARRIER
David J. Erickson, 15357 Nightingale St. NW., Anoke, Minn. 55303
Filed Oct. 27, 1980, Ser. No. 200,774
Term of patent 14 years
Int. Cl. D02—*99*
U.S. Cl. D2—400



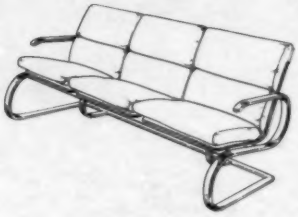
267,521
COMBINED BOTTLE OPENER KEY FOB
Robert G. Mathieson, 4457 Lakeshore Rd., Burlington, Ontario, Canada
Filed Dec. 4, 1980, Ser. No. 213,003
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—62

267,522
LUGGAGE
Ted Stark, Jersey City, N.J., assignor to M & M Luggage Co., Inc., Jersey City, N.J.
Filed Jan. 12, 1981, Ser. No. 224,331
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71

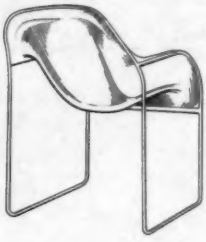
267,523
CAR SEAT COVER
William W. Neilson, 26 Ramsay Ave., Hillcrest, Australia
Filed Jul. 10, 1980, Ser. No. 167,533
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—48



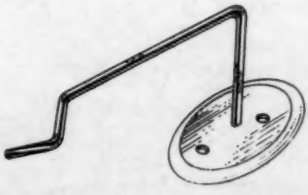
267,524
SETTEE
Larry G. Hickey, Costa Mesa, Calif., assignor to Tropitone Furniture Co., Inc., Sarasota, Fla.
Filed Dec. 23, 1980, Ser. No. 223,486
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63



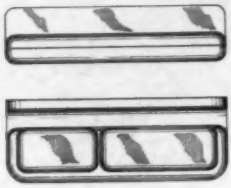
267,525
CHAIR
Warren H. Snodgrass, 223 Woodland Rd., Kentfield, Calif. 94904
Filed Jul. 27, 1979, Ser. No. 61,485
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



267,526
SOAP HOLDER
Earl S. Figuered, 1147 Wanamaker Dr., #B, Covina, Calif. 91724
Filed Jul. 3, 1980, Ser. No. 165,606
Term of patent 14 years
Int. Cl. D23—*02*; D8—*08*
U.S. Cl. D6—90

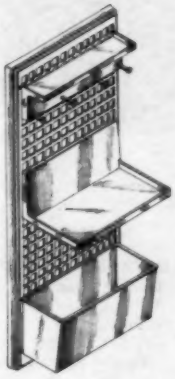


267,527
SOAP HOLDER
Piet Cohen, Amsterdam, Netherlands, assignor to Materias Plasticas, Limitada, Leiria, Portugal
Filed Nov. 4, 1980, Ser. No. 204,042
Claims priority, application Portugal, May 9, 1980, 15090
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—90

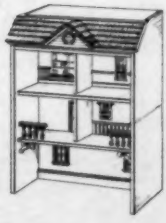


267,528
COMBINED TUMBLER AND TOOTHBRUSH HOLDER
Piet Cohen, Amsterdam, Netherlands, assignor to Materias Plasticas, Limitada, Leiria, Portugal
Filed Nov. 4, 1980, Ser. No. 204,030
Claims priority, application Portugal, May 9, 1980, 15,083
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—92

267,529
STORAGE UNIT
Anthony J. Brescia, Liverpool, and Spencer Rhoads, Baldwinsville, both of N.Y., assignors to Syroco, Inc., Syracuse, N.Y.
Filed Apr. 1, 1981, Ser. No. 249,856
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—131

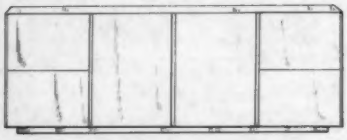


267,530
HUTCH OR SIMILAR ARTICLE
Sidney A. Lenger, Jr., Jamestown, N.C., assignor to The Singer Company, Stamford, Conn.
Filed Sep. 12, 1980, Ser. No. 186,814
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—53

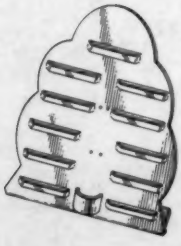


267,531
DROP LID CHEST OR SIMILAR ARTICLE
Sidney A. Lenger, Jr., Jamestown, N.C., assignor to The Singer Company, Stamford, Conn.
Filed Sep. 12, 1980, Ser. No. 186,813
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—154

267,532
CREDENZA OR SIMILAR ARTICLE
Warren Platner, Guilford, Conn., assignor to Litton Business Systems, Inc., Burlington, Iowa
Division of Ser. No. 914,285, Jun. 9, 1978. This application Jan. 9, 1981, Ser. No. 223,710
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—164

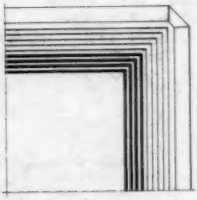


267,533
GREETING CARD HOLDER
Jean H. Phillips, 538 W. Midlothian Blvd., Youngstown, Ohio 44511
Filed Nov. 3, 1980, Ser. No. 202,939
Term of patent 14 years
Int. Cl. D06—*06*
U.S. Cl. D6—180

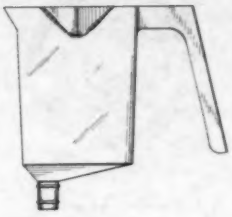


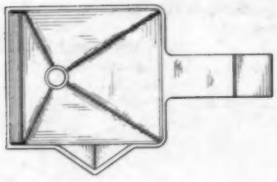
267,534
CORNER CONNECTOR FOR FURNITURE
Ruedi Zwissler, St. Jakobstr. 87, 9000 St. Gallen, Switzerland
Filed Oct. 10, 1980, Ser. No. 196,611
Claims priority, application Hague, Apr. 11, 1980, DM/000 140
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191

267,535
DOORMAT SUPPORT PLATE OR SIMILAR ARTICLE
Ken Yamazaki, Kobe; Yosuki Yamamoto, Toyonaka; Takehisa Kinoyama, Muko, and Kinichi Sasagawa, Takatsuki, all of Japan, assignors to Duskin Franchise Kabushiki Kaisha, Osaka, Japan
Filed Feb. 9, 1981, Ser. No. 232,965
Claims priority, application Japan, Nov. 29, 1980, 55-49752
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D6—219



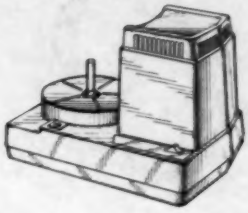
267,536
COMBINED SCOOP, FUNNEL, AND POURER
James R. Findlay, Toledo, Ohio, assignor to Impact Products, Inc., Toledo, Ohio
Filed Nov. 10, 1980, Ser. No. 205,698
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D7—318

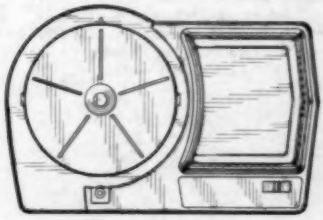




267,537
FLUID DISPENSING SPOON
James M. Borer, 419 Webster Ave., North Mankato, Minn. 56001
Filed Nov. 17, 1980, Ser. No. 207,404
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—141

267,538
FOOD PROCESSOR
Norman A. Steinkamp, La Grange Park; Richard K. Thomas, Elk Grove Village, and Bernard B. Bluestein, Des Plaines, all of Ill., assignors to Sunbeam Corporation, Chicago, Ill.
Filed Jan. 12, 1981, Ser. No. 224,249
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—386

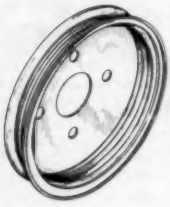




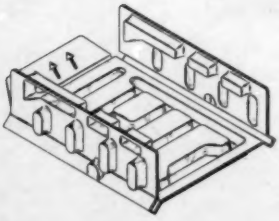
267,539
COAL BIN
Richard A. Russo, Holbrook, Mass., assignor to Russo Manufacturing Corp., Randolph, Mass.
Filed Aug. 1, 1980, Ser. No. 174,637
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D23—138.5

267,540
POLY-V PULLEY
Yukio Kanemitsu, Kobe, Japan, assignor to Goshi Kaisha Kanemitsu Doko Yosetsu-sho, Japan
Filed Sep. 26, 1980, Ser. No. 191,434
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D8—360

267,541
POLY-V PULLEY
Yukio Kanemitsu, Kobe, Japan, assignor to Goshi Kaisha Kanemitsu Dosho Yosetsu-Sho, Japan
Filed Apr. 8, 1981, Ser. No. 252,497
Claims priority, application Japan, Dec. 26, 1980, 55-54859
Term of patent 14 years
Int. Cl. D14—*05*
U.S. Cl. D8—360

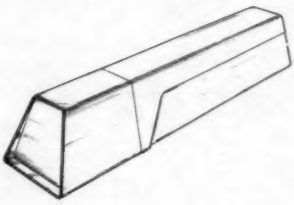


267,542
RIBBON CARTRIDGE SHIPPING TRAY
Anthony N. Paone, Syracuse, N.Y., assignor to SCM Corporation, New York, N.Y.
Filed Feb. 2, 1981, Ser. No. 230,839
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—345



267,543
FOOD CONTAINER
Dennis J. Nemura, Easton, Pa., and John M. Wathen, Jr., Chester, N.J., assignors to American Can Company, Greenwich, Conn.
Filed Sep. 12, 1979, Ser. No. 74,673
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—428

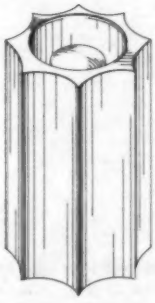
267,544
PACKAGING CONTAINER FOR WELDING RODS
Oscar T. Neto; Joao E. B. Migliano, and Jean L. Fluckiger, all of Sao Paulo, Brazil, assignors to Eutectic Corporation, Flushing, N.Y.
Filed Feb. 6, 1981, Ser. No. 232,375
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—431



267,545
CLOSURE PLUG
Kinji Mineo, Tokyo, Japan, assignor to Yamato Iron Works Co., Ltd., Tokyo, Japan
Filed Apr. 14, 1980, Ser. No. 140,085
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—439

267,546
OVERCAP FOR AEROSOL CONTAINER
Robert S. Manlove, 31 Spyglass Hill, Oakland, Calif. 94618
Filed Jan. 26, 1981, Ser. No. 228,265
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—445

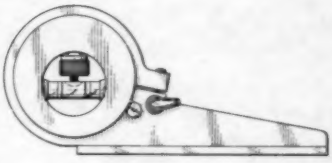
267,547
CONTAINER CAP
William T. Nightingale, III, Campbell, Calif., assignor to Pacer Technology & Resources, Inc., Campbell, Calif.
Filed Dec. 15, 1980, Ser. No. 216,428
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—453



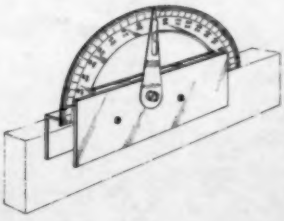
267,548
DIGITAL WRIST WATCH OR THE LIKE
Masao Wada, Mitaka, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jul. 15, 1980, Ser. No. 169,225
Claims priority, application Japan, Feb. 10, 1978, 53-4374
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—38

267,549
WATCH
Joseph Kanoui, Geneva, Switzerland, assignor to Interdica S.A., Villars sur Glane, Switzerland
Filed Jul. 7, 1980, Ser. No. 166,746
Claims priority, application Int'l Pat. Institute, Jan. 7, 1980, 69 774
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—39

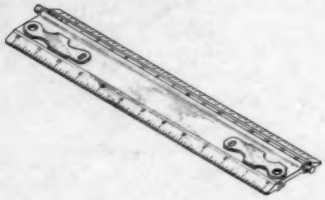
267,550
COMBINATION SET PROTRACTOR
Norman L. Smyth, and Roy G. Hodgson, both of Sheffield, England, assignors to Moore & Wright (Sheffield) Ltd., Sheffield, England
Filed Dec. 11, 1980, Ser. No. 215,267
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—62



267,551
VARIABLE GRADE LEVEL
Daniel Z. Seyler, R.D. 1, Box 242C, Phillipsburg, N.J. 08865
Filed Dec. 23, 1980, Ser. No. 219,776
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—65

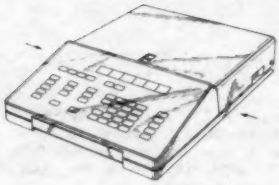


267,552
MULTIPLE SCALE RULE
Douglas D. Seely, Jr., 54743 Merrifield Dr., Mishawaka, Ind. 46544, and Douglas D. Seely, III, 234 Murray, South Bend, Ind. 46637
Filed Nov. 10, 1980, Ser. No. 205,415
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—71



267,553
ENGINE ANALYZER
Peter Bressler, Philadelphia, Pa.; David A. Cicero, Collingswood, N.J.; Udo Kiefer, Marlton, N.J., and Robert E. Citerone, Pennsauken, N.J., assignors to Siemens Corporation, Iselin, N.J.
Filed May 29, 1979, Ser. No. 43,162
Term of patent 7 years
Int. Cl. D10—*04*
U.S. Cl. D10—75

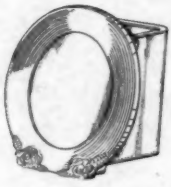
267,554
MULTI-FUNCTION DIGITAL-CIRCUIT TESTER OR SIMILAR ARTICLE
Nicholas D. Swinstead, Church Crookham, England, assignor to The Solartron Electronic Group Limited, Farnborough, England
Filed Dec. 17, 1980, Ser. No. 217,313
Claims priority, application United Kingdom, Jun. 18, 1980, 80995365
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—75



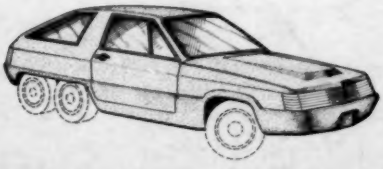
267,555
WRIST PEN HOLDER
Morris E. Cox, Lot 65, Linde Rd., Jackson, Miss. 39203
Continuation-in-part of Ser. No. 932,045, Aug. 7, 1978, Pat. No. Des. 258,812. This application Oct. 10, 1980, Ser. No. 195,831
Term of patent 14 years
Int. Cl. D11—*01;* D02—*99*
U.S. Cl. D11—2

267,556
PLAQUE
Charles H. Allgood, II, 3886 Healy Rd., Memphis, Tenn. 38111
Filed Oct. 20, 1980, Ser. No. 198,825
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—133

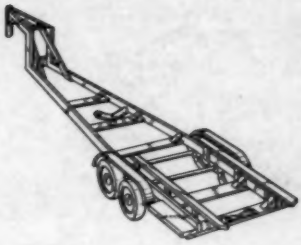
267,557
COMBINED FLOWER VASE AND PICTURE FRAME
Lynda R. Resnick, Beverly Hills, Calif., assignor to Teleflora Inc., Redondo Beach, Calif.
Filed Dec. 3, 1980, Ser. No. 212,406
Term of patent 14 years
Int. Cl. D6—*07*; D11—*02*
U.S. Cl. D11—144



267,558
AUTOMOBILE BODY
Kipp K. Stevens, Mequon, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.
Filed Mar. 3, 1980, Ser. No. 126,556
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—91



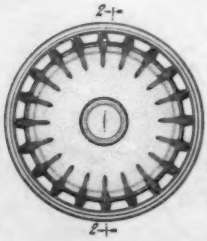
267,559
BOAT TRAILER
Robert S. Wormser, 6880 SW. 19th Ave., Ocala, Fla. 32671
Filed Aug. 21, 1980, Ser. No. 180,021
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—97



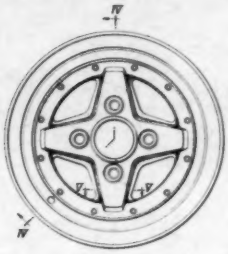
267,560
MOTORCYCLE
Yukihiko Matsue, Tokyo, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan
Filed Oct. 8, 1980, Ser. No. 194,962
Claims priority, application Japan, Apr. 26, 1980, 55-16810
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—110

267,561
MOTORCYCLE
Koichiro Ban, Tachikawa; Tsunemi Kawashima, Tokyo, and Toshiharu Shimizu, Tokorozawa, all of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Japan
Filed Feb. 24, 1981, Ser. No. 237,640
Claims priority, application Japan, Aug. 27, 1980, 55-35382
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—110

267,562
WHEEL COVER
Jerry P. Palmer, Birmingham, and Randolph J. Wittine, Rochester, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Aug. 15, 1980, Ser. No. 178,356
Term of patent 7 years
Int. Cl. D12—*16*
U.S. Cl. D12—211

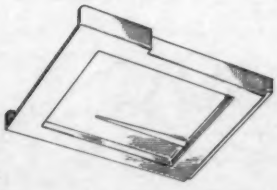


267,563
VEHICLE WHEEL
Masakazu Hayashi, Higashi-Osaka, Japan, assignor to Kabushiki Kaisha Hayashi Racing, Osaka, Japan
Filed Aug. 22, 1980, Ser. No. 180,500
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—211

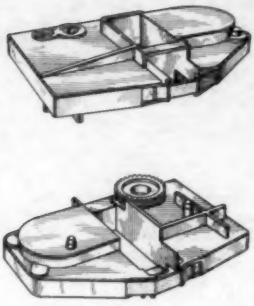


267,564
VEHICLE WHEEL
Dennis S. Wright, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 22, 1980, Ser. No. 180,513
Term of patent 7 years
Int. Cl. D12—*16*
U.S. Cl. D12—211

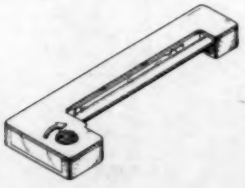
267,565
DOCUMENT FEEDER FOR COPYING MACHINE
Gregory Fossella; J. B. MacDonald, both of Boston, and Michael Mercandante, North Quincy, all of Mass., assignors to Nashua Corporation, Nashua, N.H.
Filed Jul. 9, 1979, Ser. No. 56,150
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—32



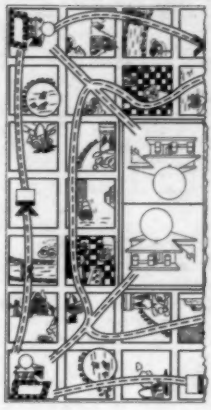
267,566
INKED TAPE CARTRIDGE
Robert C. Hoffman, Park Ridge, Ill., assignor to Qwint Systems, Inc., Northbrook, Ill.
Filed Mar. 9, 1981, Ser. No. 241,496
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—12



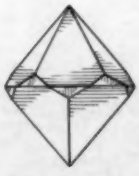
267,567
INK-RIBBON CASSETTE
Masahiko Mori, Shiojiri, Japan, assignor to Shinshu Seiki Kabushiki Kaisha, Suwa and Kabushiki Kaisha Suwa Seikosha, Tokyo, both of, Japan
Filed Oct. 28, 1980, Ser. No. 201,105
Claims priority, application Japan, May 20, 1980, 55-19724
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D18—22



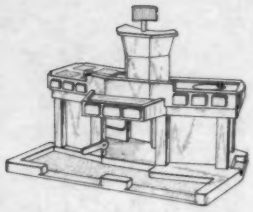
267,568
GAME BOARD
Paul K. Murphy, 6790 Tapley St., Simi Valley, Ventura County, Calif. 93063
Filed Dec. 4, 1980, Ser. No. 212,903
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—25



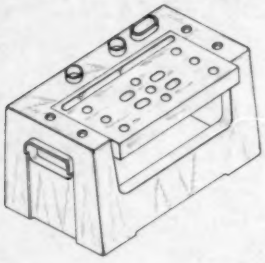
267,569
TEN SIDED DIE
Clifford E. Polite, Biloxi, Miss., assignor to Gamescience, Inc., Gulfport, Miss.
Filed Jan. 9, 1981, Ser. No. 223,573
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—41



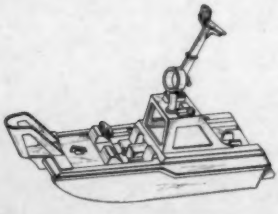
267,570
TOY AIRPORT
Augusto Argandona, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 15, 1980, Ser. No. 216,264
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—118



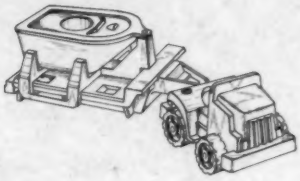
267,571
TOY WORKBENCH
Merry S. Riehm, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Nov. 24, 1980, Ser. No. 210,266
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—121



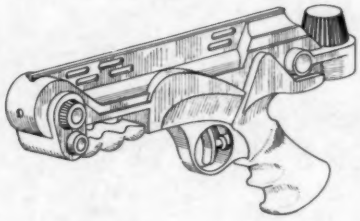
267,572
TOY BOAT
Kenneth R. Wilkes, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 15, 1980, Ser. No. 216,209
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—130



267,573
TOY BOAT RIG
Jack L. Breneman, Orchard Park, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 15, 1980, Ser. No. 216,208
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—135



267,574
TOY WATER GUN
Francis M. L. Barthropp, 4371 Marine Dr., West Vancouver, British Columbia, Canada (V7V 1P3)
Filed Oct. 27, 1980, Ser. No. 200,885
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—147



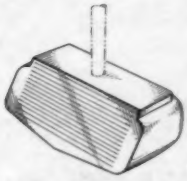
267,575
INDIAN DOLL
Ann Carlson, 31 Birch Ave. North, Maple Lake, Minn. 55358
Filed Dec. 4, 1980, Ser. No. 212,875
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—182

267,576
INDIAN DOLL
Ann Carlson, 31 Birch Ave. North, Maple Lake, Minn. 55358
Filed Dec. 4, 1980, Ser. No. 212,876
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—182

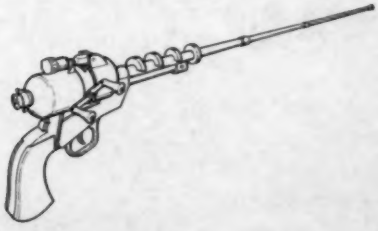
267,577
INDIAN DOLL
Ann Carlson, 31 Birch Ave. North, Maple Lake, Minn. 55358
Filed Dec. 4, 1980, Ser. No. 212,877
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—182

267,578
INDIAN DOLL
Ann Carlson, 31 Birch Ave. North, Maple Lake, Minn. 55358
Filed Dec. 4, 1980, Ser. No. 212,880
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—182

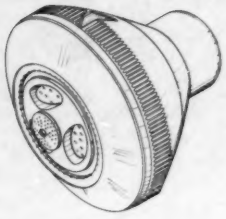
267,579
GOLF CLUB HEAD
Clyde E. Mullins, 632 Ruisseau Francais, Half Moon Bay, Calif. 94019
Filed Nov. 24, 1980, Ser. No. 209,544
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—214



267,580
COMBINED FISHING ROD AND REEL WITH GUN-SHAPED HANDLE
Benjamin W. Price, P.O. Box 1681, Marion, N.C. 28752
Filed Oct. 9, 1980, Ser. No. 195,508
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—26

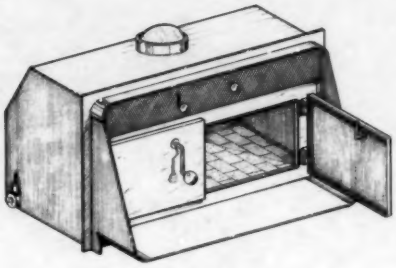


267,581
SHOWERHEAD
Spencer L. Mackay, Canoga Park; Frederick G. Mackay; Allan B. Johnson, both of Tarzana, all of Calif., and David W. Smith, Ft. Collins, Colo., assignors to Teledyne Industries, Inc., Fort Collins, Colo.
Filed Oct. 6, 1980, Ser. No. 193,960
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35

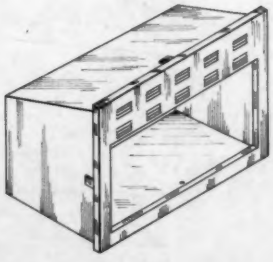


267,582
HAND-HELD SHOWERHEAD
Spencer L. Mackay, Canoga Park; Frederick G. Mackay; Allan B. Johnson, both of Tarzana, all of Calif., and David W. Smith, Ft. Collins, Colo., assignors to Teledyne Industries, Inc., Ft. Collins, Colo.
Filed Oct. 6, 1980, Ser. No. 193,961
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35

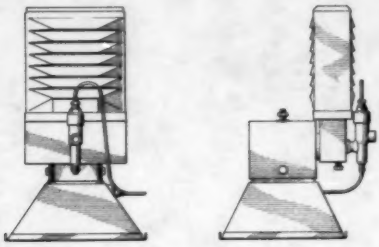
267,583
FIREPLACE INSERT
David W. Pratt, 3411 'C' St. NE., Auburn, Wash. 98002
Filed Oct. 27, 1980, Ser. No. 201,020
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—94



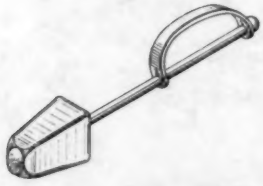
267,584
BUILT-IN FIREPLACE UNIT
Gloria D. Hilker, 1109 S. Landmark Trail, Hopkins, Minn. 55343
Filed Mar. 9, 1981, Ser. No. 241,628
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—94



267,585
GAS-FIRED INFRARED HEATER
Pierre Sobole, Clenay, France, assignor to Societe Bourguignonne de Mecanique, France
Filed May 9, 1980, Ser. No. 148,571
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—122

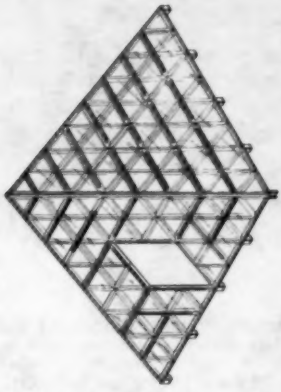


267,586
DENTAL MOUTH PROP
Roger A. Hatlen, 3021 Joseph Ave., Sacramento, Calif. 95825
Filed Apr. 30, 1980, Ser. No. 145,307
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—10

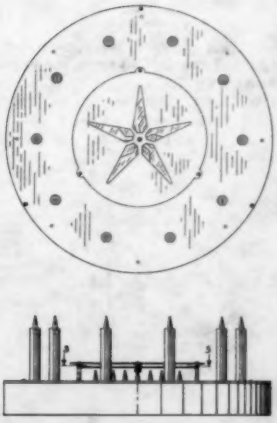


267,587
PLUNGER ROD/NEEDLE PROTECTOR FOR A HYPODERMIC SYRINGE
Thomas J. Ambrosio, Somerville; Henry J. Buchman, Edison; Joseph J. Rogus, Bridgewater, and Henry R. Sochon, Clifton, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.
Filed Sep. 4, 1980, Ser. No. 184,436
Term of patent 14 years
Int. Cl. D24—*02, 99*
U.S. Cl. D24—25

267,588
PYRAMID GREENHOUSE
David Goodell, Box 176, Trimont, Minn. 56176
Filed Oct. 27, 1980, Ser. No. 200,935
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—15

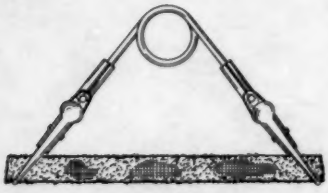


267,589
ROTATING LIGHT DISPLAY
Robert I. Worley, 4011 Sinclair, Austin, Tex. 78756
Filed Jul. 28, 1980, Ser. No. 173,147
Term of patent 14 years
Int. Cl. D26—*99*
U.S. Cl. D26—96

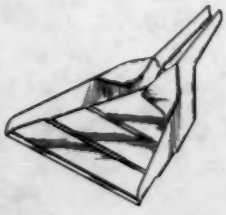


267,590
HOLDER PRIMARILY FOR A LIGHTER
Kumar Varma, London, England, assignor to Hall & Keane Design Limited, London, England
Filed Jul. 30, 1980, Ser. No. 173,851
Claims priority, application United Kingdom, May 14, 1980, 994,891
Term of patent 14 years
Int. Cl. D27—*06*
U.S. Cl. D27—51

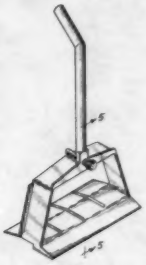
267,591
V-SHAPED CERAMIC GREENWARE CLEANER
Thomas E. Gibson, 6709 Lyrewood Dr., Oklahoma City, Okla. 73132
Filed Aug. 30, 1980, Ser. No. 179,717
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—52



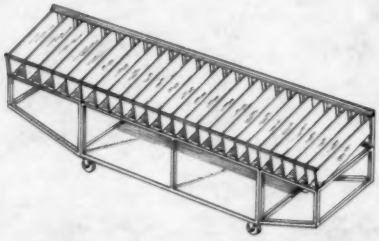
267,592
DUST PAN
C. Lee Payne, Jr., and Phillip J. Snoke, both of Atlanta, Ga., assignors to Ralph Edwards, Gainesville and Frank E. Stevenson, Jr., Atlanta, both of, Ga.
Filed Oct. 17, 1980, Ser. No. 197,770
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—74



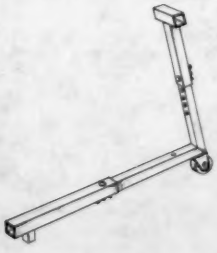
267,593
LEAF BAG HOLDER
Brian F. Crawford, Schenectady, and Philip Jaros, Gloversville, both of N.Y., assignors to White Mop Wringer Company, Fultonville, N.Y.
Filed Jul. 7, 1980, Ser. No. 166,229
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D34—01



267,594
CART FOR BANK CHECK TRANSFER TRAYS
Elmer E. Ogg, Jr.; George F. Brun, Jr., both of Dayton, and William E. Wells, West Alexandria, all of Ohio, assignors to Systems Unlimited, Inc., Dayton, Ohio
Filed May 22, 1980, Ser. No. 152,380
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D34—22



267,595
WHEELED LEVER
Billy G. Hauser, Winston-Salem, N.C., assignor to Poland Manufacturing Corporation, Winston-Salem, N.C.
Filed Aug. 8, 1980, Ser. No. 176,491
Term of patent 14 years
Int. Cl. D12—*05*; D8—*05*
U.S. Cl. D34—34



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TO WHOM

PATENTS WERE ISSUED ON THE 11TH DAY OF JANUARY, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Duda & Sons, Inc.: *See*—
Boots, Gordon C., 4,367,675, Cl. 99-546.000.

A. E. Staley Manufacturing Company: *See*—
Howard, Paulette A.; Lehnhardt, William F.; and Orthoefer, Frank T., 4,368,151, Cl. 260-123.500.

A M S S.A.: *See*—
Hellouin de Menibus, Olivier, 4,368,391, Cl. 290-4.00D.

A. Tonolli & C.S.p.A.: *See*—
Fracchia, Pierluigi, 4,368,070, Cl. 75-0.50B.

AB Akerlund & Rausing: *See*—
Gross, Helmut; and Hauck, Hermann, 4,368,095, Cl. 156-497.000.

Abara, Leonid P.: *See*—
Koshman, Vitaly I.; Petrichenko, Vladimir F.; Gnilitsky, Boris S.; Oborotov, Vyacheslav D.; Ubiiko, Alexandr M.; and Abara, Leonid P., 4,368,443, Cl. 335-138.000.

Abe, Akira: *See*—
Uenaka, Kazushige; Kashiwagi, Shinichi; Tahara, Toshiro; Shirasu, Kazuo; Usui, Yoshio; Abe, Akira; Nakagawa, Fumio; and Masuda, Tetsuya, 4,367,941, Cl. 354-324.000.

Abe, Naoto: *See*—
Fujiwhara, Mitsuto; Matsuo, Syunji; Wada, Tsuneo; Abe, Naoto; Masukawa, Toyoaki; Iijima, Akio; and Oishi, Keiji, 4,368,258, Cl. 430-493.000.

Abe, Seiko: *See*—
Igashira, Toshihiko; Nomura, Ken; and Abe, Seiko, 4,368,380, Cl. 219-539.000.

Abe, Tadashi, to Konishiroku Photo Industry Co., Ltd. Slit exposure optical system for an electrophotographic copying apparatus. 4,367,945, Cl. 355-51.000.

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ACF Industries, Inc.: *See*—
Fitzgerald, John B.; and York, George L., 4,367,764, Cl. 137-115.000.

Ackel, Gary P.: *See*—
Wood, John F. B.; Platek, Stanley W.; O'Kane, Joseph C.; and Ackel, Gary P., 4,367,783, Cl. 164-452.000.

Acker, John N.; and Petersen, Robert A., to Sunbeam Equipment Corporation. Furnace adapted to contain molten metal. 4,367,866, Cl. 266-99.000.

Ackerman, Karl. Multi-zone boiler for firing with solid and liquid fuel. 4,367,697, Cl. 122-2.000.

Adams, Robert W., to DBX, Inc. System for and method of testing transistors. 4,368,425, Cl. 324-158.00T.

Adger Kogyo Co., Ltd.: *See*—
Iijima, Zenshiro, 4,368,076, Cl. 106-22.000.

Adolphi, Heinrich: *See*—
Kiehs, Karl; and Adolphi, Heinrich, 4,368,196, Cl. 424-200.000.

Adrian, Fritz, to Steag Aktiengesellschaft. Method for operating a coal dust furnace and a furnace for carrying out the method. 4,367,686, Cl. 110-347.000.

AERPAT A.G.: *See*—
Francis, Albert C.; and Summerlin, Frederick A., 4,367,994, Cl. 411-43.000.

Agfa-Gevaert AG: *See*—
Stemme, Otto; and Wagensonner, Eduard, 4,368,484, Cl. 358-41.000.
Stemme, Otto; Wagensonner, Eduard; and Ruf, Wolfgang, 4,368,489, Cl. 358-208.000.

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Kohlbauer, Walter; and Schirk, Gunter, 4,368,010, Cl. 417-271.000.
Nittel, Fritz; Langen, Hans; and Ranz, Erwin, 4,368,259, Cl. 430-546.000.

Ahrens, Harald; and Schulz, Dieter, to Polygram GmbH. Centering device for the manufacture of a center hole in disks. 4,367,952, Cl. 356-400.000.

Ahuja, Omprakash G., to TII Industries Inc. Audible line test termination device. 4,368,363, Cl. 179-175.30R.

Aisin Seiki Kabushiki Kaisha: *See*—
Inada, Masami; and Aoki, Kongou, 4,367,674, Cl. 92-13.200.
Kitamura, Kazuhiko; Nonoyama, Takao; and Okumura, Atsuo, 4,368,366, Cl. 200-83.00Q.
Sakakibara, Naoji, 4,367,804, Cl. 180-176.000.
Tsubouchi, Kaoru; and Funahashi, Akira, 4,367,824, Cl. 220-326.000.

Aisin-Warner Kabushiki Kaisha: *See*—
Kobayashi, Kouzi; and Kobayashi, Keizo, 4,367,812, Cl. 192-3.300.

Aisin-Warner Kabushikikaisha: *See*—
Moroto, Shuzo; Matsumoto, Goichi; and Hayakawa, Yoichi, 4,367,661, Cl. 74-665.0GE.

Ajinomoto Company Incorporated: *See*—
Sato, Hiroshi; Ogoshi, Shohei; and Inoue, Goro, 4,368,204, Cl. 424-274.000.
Tosaka, Osamu; Murakami, Yutaka; Ikeda, Shigeho; and Yoshii, Hiroe, 4,368,266, Cl. 435-110.000.

Akagi, Jiro, to Kawasaki Steel Corporation. Fuel injection valve assembly for internal combustion engines. 4,367,846, Cl. 239-96.000.

Akashi, Goro: *See*—
Yamada, Yasuyuki; Kitamoto, Tatsuji; and Akashi, Goro, 4,368,237, Cl. 428-413.000.

Akhavi, David S., to American Hospital Supply Corporation. Method of dispensing a blood sample. 4,367,754, Cl. 128-763.000.

Akimoto, Shinichi: *See*—
Mizuno, Mitsuo; Suginaka, Akinori; Fujii, Masahiko; and Akimoto, Shinichi, 4,368,185, Cl. 424-78.000.

Akiyama, Masanori: *See*—
Taniguchi, Yoshiharu; Akiyama, Masanori; and Kinoshita, Osamu, 4,368,400, Cl. 310-322.000.

Akzona Incorporated: *See*—
Johnston, James J., 4,367,908, Cl. 339-154.00A.
Richmond, James M., 4,368,127, Cl. 252-8.800.

Albert, Frank, Jr., to Preformed Line Marine, Inc. Bending strain relief with bend restricting capability. 4,367,967, Cl. 403-41.000.

Alberts, Heinrich; Friesmann, Hans; Moretto, Hans-Heinrich; and Sattlegger, Hans, to Bayer Aktiengesellschaft. Organopolysiloxane-polyether-vinyl graft copolymers. 4,368,290, Cl. 525-29.000.

Alberts, Heinrich; Fischer, Winfried; and Leuschke, Christian, to Bayer Aktiengesellschaft. Thermoplastic moulding compositions of cograft polymers of cellulose esters. 4,368,292, Cl. 525-54.230.

Aldinger, Werner; Anzt, Helmut; Morlock, Gerhard; and Schaufler, Hans-Peter, to Degussa Aktiengesellschaft. Process for the production of a hydroxyl group containing ε-caprolactone modified (METH) acrylate resin. 4,368,320, Cl. 528-355.000.

Alexander, Graham H.; and Doerschuk, David C., to Battelle Memorial Institute. Suspension apparatus. 4,367,882, Cl. 280-276.000.

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Burinsky, Stanislav V.; Volf, Leonard A.; and Alexandrov, Sasho P., 4,368,277, Cl. 521-84.000.

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Ramer, Paul C., 4,367,885, Cl. 280-614.000.

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Ymker, Lucas; and Hoogendijk, Christiaan J., 4,367,654, Cl. 73-861.290.

Aluminum Company of America: *See*—
Otto, William L., Jr.; and Flynn, Edward G., 4,368,074, Cl. 419-51.000.

Alza Corporation: *See*—
Michaels, Alan S., 4,367,741, Cl. 128-260.000.

Amano, Itaru: *See*—
Kawahara, Masakatsu; Amano, Itaru; Nakagawa, Kazuhiko; Fujieda, Yasuhiko; Ureshino, Kashiro; and Asada, Mitsunori, 4,368,015, Cl. 425-29.000.

Amano, Saichiro: *See*—
Kato, Hiroaki; Hamana, Junji; Sakai, Akeo; Kawakami, Yoshio; Goto, Atsushi; and Amano, Saichiro, 4,368,496, Cl. 360-110.000.

Ambac Industries Incorporated: *See*—
DiDomenico, Robert A.; Cavanaugh, John B.; and Kimberley, John A., 4,367,714, Cl. 123-449.000.

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Meyer, Walter E.; Tomcufcik, Andrew S.; and Marsico, Joseph W., Jr., 4,368,335, Cl. 564-245.000.

American Hospital Supply Corporation: *See*—
Akhavi, David S., 4,367,754, Cl. 128-763.000.

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Darrow, John O. G., 4,368,440, Cl. 333-172.000.
Worbois, Robert J., 4,367,903, Cl. 303-13.000.

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AMP Incorporated: *See*—
Brummett, Charles R.; Crumley, J. A.; Shaak, Ray N.; and Whitaker, Dewey R., 4,368,281, Cl. 523-458.000.

Forster, Peter; Heidotting, Werner; Janosi, Wilhelm; and Kampfmann, Georg, 4,367,575, Cl. 29-33.00M.
Shatto, Walter C., Jr.; and Young, Walter M., 4,367,909, Cl. 339-176.0MF.

Amtmann, Heribert; Forkel, Hermann; and Gerlach, Hans-Jurgen, to Siemens Aktiengesellschaft. X-Ray diagnostic generator in which the x-ray tube voltage is adjusted via the x-ray tube current. 4,368,537, Cl. 378-112.000.

Ancher, Jean-Francois R.; Lacour, Alain P.; Moinet, Gerard H.; and Tisne-Versailles, Jacky A., to Delalande S.A. Novel derivatives of 3,4,5-trimethoxy cinnamoyl piperazine, their salts, the process for preparing the same and their application in therapeutics. 4,368,199, Cl. 424-250.000.

Anderson, Paul, to Leeds & Northrup Company. Automatic identification system for self tuning process controller. 4,368,510, Cl. 364-151.000.

Anderson, Ray C. Wheelie support. 4,367,883, Cl. 280-301.000.

Anderson, Richard B.; and Kalenda, Norman W., to Eastman Kodak Company. Photographic products and processes employing novel nondiffusible bridged azoaminophenol magenta dye-releasing compounds and precursors thereof. 4,368,154, Cl. 260-156.000.

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Andis, Matthew L., 4,368,376, Cl. 219-222.000.

Andis, Matthew L., to Andis Company. Curling iron with removable grooming bars. 4,368,376, Cl. 219-222.000.

Ando, Hirokazu; Ohmori, Yasuo; Fukushima, Kazumasa; Iwama, Mitsuo; and Takahashi, Tsunematsu, to OKI Electric Industry Co., Ltd.; and Nippon Telegraph & Telephone Public Corporation. Printer head for serial dot printer. 4,368,353, Cl. 178-30.000.

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Kato, Yasushi; Furukawa, Hisao; and Ando, Naotami, 4,368,297, Cl. 525-342.000.

Ando, Shizuo: *See*—
Kamimura, Teturo; Komatsubara, Masahiro; Ando, Shizuo; and Inanaga, Takuzi, 4,368,494, Cl. 360-96.500.

Andoh, Makoto: *See*—
Watanabe, Katsuyoshi; Andoh, Makoto; Saito, Yasuhisa; Maeda, Yasuteru; and Fukuyama, Yoshiya, 4,368,299, Cl. 525-481.000.

Andrade, Joseph D.; and Van Wagenen, Richard, to University of Utah Research Foundation. Process for conducting fluorescence immunoassays without added labels and employing attenuated internal reflection. 4,368,047, Cl. 435-4.000.

Andreas Stihl: *See*—
Wieland, Dieter; and Merz, Walter, 4,367,813, Cl. 192-17.00R.

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Perelman, Robert D., 4,368,350, Cl. 174-102.00D.

Andrews, Glenn C., to Pfizer Inc. Derivatives of L-ascorbic acid and D-erythorbic acid. 4,368,330, Cl. 549-315.000.

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Angerer, Klaus. Method and apparatus for the production of metal strips of indefinite length from rolled-strip sections. 4,367,839, Cl. 228-155.000.

Ani-Live Film Service Inc.: *See*—
Cooper, Sidney; and Jacob, Ezekiel J., 4,368,250, Cl. 430-109.000.

Anic, S.p.A.: *See*—
Muzzarelli, Riccardo, 4,368,322, Cl. 536-20.000.

Anik, Shabbir: *See*—
Vickery, Brian H.; Anik, Shabbir; and Jones, Richard E., 4,368,186, Cl. 424-78.000.

Anthony, Thomas R., to General Electric Company. Implantation of electrical feed-through conductors. 4,368,106, Cl. 204-15.000.

Anzt, Helmut: *See*—
Aldinger, Werner; Anzt, Helmut; Morlock, Gerhard; and Schauffler, Hans-Peter, 4,368,320, Cl. 528-355.000.

Aoki, Kongou: *See*—
Inada, Masami; and Aoki, Kongou, 4,367,674, Cl. 92-13.200.

Arakawa, Hideki: *See*—
Nakamura, Kazuhisa; and Arakawa, Hideki, 4,368,524, Cl. 365-226.000.

Araki, Kazuo; and Tochizawa, Ikuo, to Kabushiki Kaisha Fujikoshi. Solenoid. 4,368,446, Cl. 335-258.000.

Araya, Hiroyuki; Saito, Toshihiko; Kumazawa, Katsuyoshi; Sakamoto, Moriyoshi; and Koyama, Mitoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Liquid fuel combustion apparatus. 4,368,032, Cl. 431-118.000.

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Pollock, Mark W.; and Seubert, George A., Jr., 4,368,139, Cl. 252-384.000.

Ariga, Shoji, to Clarion Co., Ltd. Indicator panel fixing arrangement. 4,368,229, Cl. 428-120.000.

Ario, Hiroyosi: *See*—
Kimura, Susumu; Ario, Hiroyosi; and Midorikawa, Minoru, 4,367,719, Cl. 123-568.000.

Armstrong, Maclay M., to Northwest Orthodontics, Inc. Disconnect for neckstrap or headcap reaction member. 4,368,039, Cl. 433-5.000.

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Arter, Nelson K.; Dodt, William C.; and Farel, Charles A., to International Business Machines Corporation. Document feeder for moving bed machines such as copiers. 4,367,947, Cl. 355-75.000.

Artsis, Evgeny S.: *See*—
Dobrokhtova, Marina K.; Evseev, Bladimir A.; Artsis, Evgeny S.; Enenshtein, Gennady A.; Cheburashko, Boris P.; Platoshkina, Maria G.; Nefedov, Vladimir P.; and Valyshkina, Ljudmila I., 4,368,318, Cl. 528-326.000.

Asada, Mitsunori: *See*—
Kawahara, Masakatsu; Amano, Itaru; Nakagawa, Kazuhiko; Fujieda, Yasuhiko; Ureshino, Kashiro; and Asada, Mitsunori, 4,368,015, Cl. 425-29.000.

Asahi-Dow Limited: *See*—
Yamashita, Izumi; and Fukuda, Kunio, 4,368,293, Cl. 525-68.000.

Asahi Fiber Glass Company Limited: *See*—
Morioka, Masayoshi; and Kawashima, Sadao, 4,368,232, Cl. 428-228.000.

Asahi Glass Company, Ltd.: *See*—
Kobayashi, Takayuki; and Tamamura, Ryo, 4,368,223, Cl. 427-443.100.
Yamabe, Masaaki; Kodama, Shun-ichi; and Kojima, Gen, 4,368,308, Cl. 526-247.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Angelini, Gianfranco; and Paoletti, Ugo, 4,368,078, Cl. 106-164.000.
Miyake, Tetsuya; Takeda, Kunihiko; and Onitsuka, Hatsuki, 4,368,175, Cl. 423-7.000.
Yanagihara, Yuzo; Noguchi, Kohji; and Honda, Makoto, 4,368,275, Cl. 521-52.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Okura, Zenichi, 4,367,939, Cl. 354-272.000.

Asakura, Hiroshi; Kusaka, Masaharu; Hirata, Mituto; and Machihara, Akio, to Toyo Kagaku Kabushiki Kaisha. Method of manufacturing corrugated tube. 4,368,088, Cl. 156-143.000.

Asami, Takayoshi, to Kobe Steel, Ltd. Heat transfer tubing for natural gas evaporator. 4,367,791, Cl. 165-109.00T.

Asanagi, Etsuo: *See*—
Miyoshi, Hajime; Okabayashi, Ikuo; and Asanagi, Etsuo, 4,367,986, Cl. 405-266.000.

Asano, Kazuo, to Kabushiki Kaisha Asano Kenkyusho. Forming machines. 4,368,024, Cl. 425-397.000.

Asano, Mitsuru: *See*—
Naito, Junichiro; Yamamoto, Shinichi; Suzuki, Zituo; and Asano, Mitsuru, 4,368,025, Cl. 425-462.000.

ASEA Aktiebolag: *See*—
Berg, Arne, 4,367,893, Cl. 294-106.000.

Ashida, Tetsushi: *See*—
Hata, Kunio; Oshima, Kihachiro; Kano, Isao; Matsukura, Norio; Umeda, Hiroaki; Matsui, Motoi; Ashida, Tetsushi; Nishiguchi, Yoichi; and Yasui, Nobushige, 4,368,081, Cl. 134-2.000.

Ashimori Industry Co., Ltd.: *See*—
Ontsuga, Hisao; Morinaga, Akio; and Morita, Akira, 4,368,091, Cl. 156-287.000.

Ashland Oil, Inc.: *See*—
Blegen, James R.; Zapfe, Helmut H.; and Bulgozdy, Eugene L., 4,368,222, Cl. 427-340.000.

Askins, William J.: *See*—
Krueck, John F.; Braden, Donald G.; and Askins, William J., 4,367,673, Cl. 91-437.000.

Atari, Inc.: *See*—
Nielsen, Carl J., 4,368,515, Cl. 364-200.000.

Atlantic Richfield Company: *See*—
Keller, Gerald H.; Senese, Frank J.; and Vlasic, John G., 4,367,827, Cl. 222-2.000.

Audeh, Constandi A.; and Dickert, Joseph J., Jr., to Mobil Oil Corporation. Method of removing moisture from hydraulic systems. 4,368,126, Cl. 210-663.000.

Avco Corporation: *See*—
Exley, John T.; Kuintzle, Charles, Jr.; and Tate, David L., 4,368,005, Cl. 415-207.000.

Azzam, Nadim, to Eurosil GmbH. Eight segment display for oriental numerals. 4,368,464, Cl. 340-756.000.

B. F. Goodrich Company, The: *See*—
Heimovics, John F., Jr.; and Seabase, Peter P., 4,368,009, Cl. 417-191.000.

Baba, Masaharu; Honda, Kiyokazu; and Hashima, Akiyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing a baseless incandescent lamp assembly. 4,367,573, Cl. 29-25.130.

Babskaya, Ida N.: *See*—
Abishev, Dzhantore N.; Buketov, Evnei A.; Shindauletova, Aigul T.; Baltynova, Nazymkul; Babskaya, Ida N.; Kobzhasov, Abubakir K.; Malyshev, Vitaly P.; Bauer, Ivan K.; Mukhamedinov, Murat M.; Kusainov, Temirkhan A.; Orazalina, Kasken N.; and Buketov, Eslambek A., 4,368,176, Cl. 423-25.000.

Baccei, James S. C., to Litton Systems, Inc. Connector mounting press. 4,367,583, Cl. 29-739.000.

Bachet, Bernard; and Doucelance, Claude, to Commissariat a l'Energie Atomique. Non-destructive testing method and apparatus for spot welds. 4,368,422, Cl. 324-64.000.

Backx, Leo J. J.: *See*—
Heeres, Jan; and Backx, Leo J. J., 4,368,200, Cl. 424-250.000.

Bacs Megyei Allami Epitoipari Vallalat: *See*—
Stefan, Mihaly; Hegedus, Zoltan; Bagi nee Schmidt, Terezia; Dorner, Henrik; Kanyo, Miklos; and Fuzesi, Pal, 4,368,221, Cl. 427-305.000.

Bagi nee Schmidt, Terezia: *See*—
Stefan, Mihaly; Hegedus, Zoltan; Bagi nee Schmidt, Terezia; Dorner, Henrik; Kanyo, Miklos; and Fuzesi, Pal, 4,368,221, Cl. 427-305.000.

Bahr, Theodor; and Pfalzer, Lothar, to J. M. Voith GmbH. Method and apparatus for the production of a suspension of fibrous material made from waste-paper. 4,368,101, Cl. 162-4.000.

Bailey, William D., to Stimtech, Inc. Stimulating electrode. 4,367,755, Cl. 128-798.000.

Bain, James. Safety connector for flexible tube device. 4,367,769, Cl. 138-114.000.

Baker, Charles P. Violin, kit and method of making same. 4,367,777, Cl. 144-346.000.

Bakonyi, Maria: *See*—
Szoke, Sandor; Lugosi, Gyorgy; Bakonyi, Maria; Ghyczy, Jeno; and Csermely, Gyorgy, 4,368,328, Cl. 548-306.000.

Baldwin Piano & Organ Company: *See*—
Ganz, Alfred; Hartwig, Karl; Jung, Christoph; Schnall, Gunther; Schlick, Erich; and Vossnacke, Jurgen, 4,367,954, Cl. 366-156.000.

Ball, Christopher; Collins, John S.; and Hamlyn, Paul F., to Glaxo Group Limited. Production of cephalosporins. 4,368,263, Cl. 435-47.000.

Ball Corporation: *See*—
Mapes, Glenn H.; Kwiatkowski, Jerome A.; and Haynes, J. David, 4,368,062, Cl. 65-29.000.

Ballew, Donald H. Medicament container with timer top. 4,367,955, Cl. 368-10.000.

Baltynova, Nazymkul: *See*—
Abishev, Dzhantore N.; Buketov, Evnei A.; Shindauletova, Aigul T.; Baltynova, Nazymkul; Babskaya, Ida N.; Kobzhasov, Abubakir K.; Malyshev, Vitaly P.; Bauer, Ivan K.; Mukhamedinov, Murat M.; Kusainov, Temirkhan A.; Orazalina, Kasken N.; and Buketov, Eslambek A., 4,368,176, Cl. 423-25.000.

Bamford, Nigel T.: *See*—
Forse, David P. S.; Franks, Richard W.; Bamford, Nigel T.; Coates, Philip V.; and Thorscov, Jan C., 4,368,456, Cl. 340-146.30Q.

Baranczyk, James G.; and Baranczyk, Richard J. Dustless cutter. 4,367,586, Cl. 30-241.000.

Baranczyk, Richard J.: *See*—
Baranczyk, James G.; and Baranczyk, Richard J., 4,367,586, Cl. 30-241.000.

Barbal, Andrew L. Automatically disengagable safety buckle assembly. 4,367,570, Cl. 24-230.00R.

Barber-Colman Company: *See*—
Jornod, Eugene R.; and Siden, Steven D., 4,368,502, Cl. 361-192.000.

Barber, S. Morgan. Lower body supporting mechanism for a tiltable body exerciser. 4,367,731, Cl. 128-71.000.

Barkis, Edward; Crummer, Robert R.; and Joyner, James M., to Standard Oil Company (Indiana). Coated woven and non-woven polyolefin articles. 4,368,233, Cl. 428-245.000.

Barlow, Gordon A.; Newcomer, John R.; Krutsch, John R.; and Bezark, Fred, to Gordon Barlow Design. Boxing game. 4,367,875, Cl. 273-85.00F.

Barnoud, Francois; and Labays, Jean-Bernard. Static penetrometer. 4,367,647, Cl. 73-84.000.

Barry Wright Corporation: *See*—
Peterson, Robert R., 4,368,050, Cl. 464-83.000.

Barsotti, Edward J.: *See*—
Hance, Richard D.; and Barsotti, Edward J., 4,368,410, Cl. 318-116.000.

Bartel, William G.: *See*—
Bros, Daniel M.; Bartel, William G.; and Larsen, LaVerne M., 4,367,843, Cl. 231-2.00E.

BASF Aktiengesellschaft: *See*—
Hammon, Fritz, 4,367,951, Cl. 356-357.000.
Kiehs, Karl; and Adolphi, Heinrich, 4,368,196, Cl. 424-200.000.
Rentzea, Costin; Feuerherd, Karl-Heinz; Zeeh, Bernd; and Jung, Johann, 4,368,066, Cl. 71-76.000.

BASF Wyandotte Corporation: *See*—
Motzkus, Gert; and Fohn, Kurt, 4,368,055, Cl. 8-662.000.

Battelle Memorial Institute: *See*—
Alexander, Graham H.; and Doerschuk, David C., 4,367,882, Cl. 280-276.000.
de Pous, Olivier, 4,368,143, Cl. 252-457.000.

Battista Lozio & Figli S.P.A.: *See*—
Lozio, Battista, 4,367,834, Cl. 227-67.000.

Bauer, Ivan K.: *See*—
Abishev, Dzhantore N.; Buketov, Evnei A.; Shindauletova, Aigul T.; Baltynova, Nazymkul; Babskaya, Ida N.; Kobzhasov, Abubakir K.; Malyshev, Vitaly P.; Bauer, Ivan K.; Mukhamedinov, Murat M.; Kusainov, Temirkhan A.; Orazalina, Kasken N.; and Buketov, Eslambek A., 4,368,176, Cl. 423-25.000.

Bauer, Karl-Heinz; Eckert, Gerold; and Wolf, Reinhold, to Pren Elektrofeinmecahnische Wereke Jakob Preh Nachf. GmbH & Co. Key assembly. 4,368,441, Cl. 334-15.000.

Baumann, Hans, to Grob & Co. Aktiengesellschaft. Connecting part for electrical warp stop motion on weaving machines. 4,367,771, Cl. 139-358.000.

Baumann, Heinz, to Siemens Aktiengesellschaft. Tomograph for producing transverse layer images. 4,368,535, Cl. 378-15.000.

Baxmann, Fritz: *See*—
Frese, Albert; and Baxmann, Fritz, 4,368,291, Cl. 525-53.000.

Baxter Travenol Laboratories, Inc.: *See*—
Gupton, John E., 4,367,736, Cl. 128-214.00E.
Hannah, Richard E.; and Lyons, Steffen, 4,368,023, Cl. 425-392.000.

Bayer Aktiengesellschaft: *See*—
Alberts, Heinrich; Friemann, Hans; Moretto, Hans-Heinrich; and Sattlegger, Hans, 4,368,290, Cl. 525-29.000.
Alberts, Heinrich; Fischer, Winfried; and Leuschke, Christian, 4,368,292, Cl. 525-54.230.
Brandes, Wilhelm; and Daum, Werner, 4,368,202, Cl. 424-273.00P.
Hocker, Jurgen; Merten, Rudolf; and Fitzky, Hans G., 4,368,319, Cl. 528-353.000.
Rasshofer, Werner; Grogler, Gerhard; and Findeisen, Kurt, 4,368,278, Cl. 521-115.000.

Bayer Aktiengesellschaft-Bayerwerk: *See*—
Egert, Karl-Heinz; Wank, Joachim; and Reese, Eckart, 4,368,231, Cl. 428-220.000.

Bayer, Christian, to Precision Valve Corporation. One-piece mechanical break up (MBU). 4,367,847, Cl. 239-337.000.

Bayer, Erich, to Dr. Johannes Heidenhain GmbH. Method for making matt diffusion patterns. 4,368,245, Cl. 430-5.000.

Bayerlein, Friedrich J.; Habereder, Peter P.; Denkler, Maria; and Keramaris, Nikolaos, to Diamalt Aktiengesellschaft. Sizing agent and process for the manufacture thereof. 4,368,324, Cl. 536-114.000.

BBC, Brown, Boveri & Company, Ltd.: *See*—
Osman, Maged A., 4,368,135, Cl. 252-299.630.

Beanland, Neill S., to West Yorkshire Metropolitan County Council. Surface drainage system and cover member for use therein. 4,367,974, Cl. 404-5.000.

Bear Medical Systems, Inc.: *See*—
Hurd, Claude C., 4,367,767, Cl. 137-489.000.

Bechmann, Georg: *See*—
Hillinger, Bruno; and Bechmann, Georg, 4,367,598, Cl. 34-164.000.

Bechtel, Daniel L. Mount for rifle telescope sight. 4,367,606, Cl. 42-1.0ST.

Beck, Rasmus: *See*—
Langen, Robert; and Beck, Rasmus, 4,368,080, Cl. 134-1.000.

Becker, Dietmar: *See*—
Wauer, Gerd; Becker, Dietmar; and Schonthaler, Rubi, 4,367,891, Cl. 294-88.000.

Becker, Herbert; Schelhorn, Gerhard; and Sunkel, Manfred, to Metallwerk Max Brose GmbH & Co. Window lift drive. 4,367,660, Cl. 74-625.000.

Becton, Dickinson & Company: *See*—
Dudley, Betty J., deceased; and Williams, Joel L., 4,367,749, Cl. 128-637.000.

Bednar, John M.; and Petersen, Clifford W., to Exxon Production Research Co. Acoustically actuated downhole blowout preventer. 4,367,794, Cl. 166-65.00R.

Bee Line Company: *See*—
Harmon, Samuel R., 4,367,569, Cl. 24-211.00P.

Beecham Group Limited: *See*—
Dales, John R. M., 4,368,334, Cl. 562-470.000.

Behringwerke Aktiengesellschaft: *See*—
Bohn, Hans, 4,368,148, Cl. 260-112.00B.

Bell Telephone Laboratories, Incorporated: *See*—
Chung, Li-Jin W.; Moore, Ernest P.; Porter, Glendon R.; and Rizzo, Joseph F., 4,368,361, Cl. 179-170.200.
Chung, Li-Jin W.; Moore, Ernest P.; Porter, Glendon R.; and Rizzo, Joseph F., 4,368,362, Cl. 179-170.200.
Genaro, Donald M.; and McGarvey, John N., 4,368,359, Cl. 179-146.00R.
Hasegawa, Akira, 4,368,543, Cl. 455-612.000.
Presby, Herman M., 4,368,063, Cl. 65-42.000.

Bellos, Thomas J., to Petrolite Corporation. Polymers of oxyalkylated piperazines and uses thereof. 4,368,137, Cl. 252-344.000.

Belrecolt S.A.: *See*—
Aron, Jerome; Quirin, Michel; and Wattron, Albert, 4,367,622, Cl. 56-364.000.

Bemis Company, Inc.: *See*—
Fox, Harold K., 4,367,620, Cl. 53-479.000.

Bender, Steven L.: *See*—
Fletcher, George L., Jr.; Bender, Steven L.; and Wadsworth, Donald H., 4,368,247, Cl. 430-17.000.

Bendix Corporation, The: *See*—
Watson, Edwin B., 4,367,715, Cl. 123-458.000.

Benedetti, Laura. Cigarette lighter provided with a device for signalling the number of lightings effected and the time interval between two subsequent lightings. 4,368,030, Cl. 431-13.000.

Benthin, Frank, to Dragerwerk Aktiengesellschaft. Y-Fitting in the patient system of respirators. 4,367,734, Cl. 128-204.130.

Benuzzi, Gino, to Giben Impianti S.p.A. Apparatus for the automatic discharge of panels from a machining line. 4,367,999, Cl. 414-51.000.

Berchielli, Aldo S., to Yardney Electric Corporation. Method of making an electrode. 4,368,167, Cl. 264-104.000.

Berg, Arne, to ASEA Aktiebolag. Gripping device. 4,367,893, Cl. 294-106.000.

Bergendahl, Hans-Georg, to Maschinenfabrik Koopera GmbH & Co. KG. Roll press and method of regulation of the throughput of a roll press. 4,368,165, Cl. 264-40.400.

Bergs, Erwin, to Jagenberg Werke AG. Apparatus for adjustment of the coating thickness in the coating of traveling webs. 4,367,691, Cl. 118-119.000.

Bernard, Vincent R.; Ellis, R. James; and Rasovich, Ivan, to Jimmy Dean Meat Company, Inc., The. System for rapidly chilling carcasses. 4,367,630, Cl. 62-63.000.

Bernick, Herman C. System for teaching time recognition. 4,368,046, Cl. 434-304.000.

Bertrand, Hans: *See*—
Limque, Ferdinand; and Bertrand, Hans, 4,368,037, Cl. 432-239.000.

Bezark, Fred: *See*—
Barlow, Gordon A.; Newcomer, John R.; Krutsch, John R.; and Bezark, Fred, 4,367,875, Cl. 273-85.00F.

Bianco, Frank J.: *See*—
Jimenez, Oscar; and Bianco, Frank J., 4,367,752, Cl. 128-689.000.

Biffle, Morris S. Rotating blowout preventor with improved seal assembly. 4,367,795, Cl. 166-84.000.

Binder, Klaus; Edl, Wolfgang; and Twittenhoff, Hansjoachim, to Peroxid-Chemie GmbH. Accelerator for hardening unsaturated resins. 4,368,311, Cl. 526-317.000.

Biotechnology, Inc.: *See*—
Jimenez, Oscar; and Bianco, Frank J., 4,367,752, Cl. 128-689.000.

Birch, Robert A. Shoulder stand device. 4,367,870, Cl. 272-144.000.

Bird, Stanley M., Sr.: *See*—
Winter, Craig R.; Bird, Stanley M., Sr.; and Presba, Keneth E., 4,367,590, Cl. 33-137.00R.

Bitsky, Thomas C.; and Wilkus, Joseph R., to Peerless Metal Industries, Inc. Method and apparatus for lining bulk box blanks. 4,368,052, Cl. 493-96.000.

Blair, Matthew J.; and Keifer, George E., Jr., to Republic Steel Corporation. Method and apparatus for emptying bottle cars. 4,367,865, Cl. 266-44.000.

Blake, Jon R.; Knutson, Richard K.; and Strommer, Deon L., to General Mills, Inc. Composition for aerated frozen desserts containing uncooked fruit puree and method of preparation. 4,368,211, Cl. 426-564.000.

Blegen, James R.; Zapfe, Helmut H.; and Bulgozdy, Eugene L., to Ashland Oil, Inc. Vapor permeation curable coatings for surface-porous substrates. 4,368,222, Cl. 427-340.000.

Block Drug Company Inc.: *See*—
Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, 4,368,207, Cl. 424-343.000.

Blom, Ingvar G. A.; and Vuokivi, Reima J., to Hoganas AB. Refractory lining for a metal pipe. 4,367,868, Cl. 266-225.000.

Bloy, Graham P., to Eberhardt, Alfred F.; and Coghill, Marvin, a part interest to each. System for maximum efficient transfer of modulated audio frequency energy. 4,368,435, Cl. 330-133.000.

Blum, Alvin S. Photon emission tomographic apparatus and method. 4,368,389, Cl. 250-363.00S.

Blum, Herbert: *See*—
Rock, Erich; and Blum, Herbert, 4,367,566, Cl. 16-236.000.

Bluml, Hans; and Schmidt, Gerhard, to Mannesmann Demag Kunststofftechnik Zweigniederlassung der Mannesmann Demag Aktiengesellschaft. Method and apparatus for measuring the closing and holding force on pressure diecasting and injection moulding machines. 4,367,655, Cl. 73-862.540.

Blyth, David A., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Detection of polar vapors. 4,368,388, Cl. 250-283.000.

Bobst SA: *See*—
Schweingruber, Hermann, 4,367,997, Cl. 414-38.000.

Boden, Richard M.: *See*—
Licciardello, Michael; Boden, Richard M.; Watkins, Hugh; and Hanna, Marie R., 4,368,145, Cl. 252-522.00R.

Boehringer Mannheim GmbH: *See*—
Klose, Sigmar; Roder, Albert; and Schneider, Walter, 4,368,261, Cl. 435-15.000.

Boeing Company, The: *See*—
Lazaro, Luis J., Jr., 4,367,852, Cl. 242-129.720.
Thompson, Douglas, 4,367,592, Cl. 33-172.00E.

Boesiger, Dwight D.: *See*—
Siefkin, James M.; and Boesiger, Dwight D., 4,368,111, Cl. 208-11.0LE.

Bogdany, John, to General Tire & Rubber Company, The. Carpet backing adhesive. 4,368,282, Cl. 524-58.000.

Bohn, Hans, to Behringwerke Aktiengesellschaft. Protein PP_9, process for its enrichment and its isolation and its use. 4,368,148, Cl. 260-112.00B.

Bolding, Vance E., to Global Marine, Inc. Blowout preventer and guideline handling. 4,367,796, Cl. 166-341.000.

Bolton, Bruce E. Modulating heat pump system. 4,367,634, Cl. 62-238.600.

Boor nee Mezei, Anna; Toth, Jozsef; Szen, Tamas; Gabor, Laszlo; Major nee Fastner, Piroska; and Holly, Sandor, to Richter Gedeon Vegyeszeti Gyar R.T. Process for preparing 17α-hydroxy-pregn-4-en-3,20-dione derivatives. 4,368,160, Cl. 260-397.400.

Boots, Gordon C., to A. Duda & Sons, Inc. Device for orienting and topping tapered vegetables. 4,367,675, Cl. 99-546.000.

Borg, Thomas G., to Ciba-Geigy AG. Method of processing monochrome silver halide material. 4,368,255, Cl. 430-351.000.

Boudreau, Bruce E.: *See*—
Modic, Frank J.; and Boudreau, Bruce E., 4,368,279, Cl. 521-122.000.

Bourdon, Jean-Marc; Hugues, Jean-Claude; and Essoult, Marc, to Societe Europeenne des Produits Refractaires. Refractory pads for walking beam furnaces. 4,368,038, Cl. 432-253.000.

Bourgeois, Maurice: *See*—
Dubuc, Emile; Bourgeois, Maurice; May, Stanley; and Zoeller, Robert, 4,367,831, Cl. 226-14.000.

Bowman Construction Supply, Inc.: *See*—
Bowman, William E., 4,367,976, Cl. 404-68.000.

Bowman, William E., to Bowman Construction Supply, Inc. Expansion joint sealing strip assembly for roadways, bridges and the like. 4,367,976, Cl. 404-68.000.

Boyer, Wesley D., to Ford Motor Company. Signal detection circuit with self-adjusting threshold having modulated carrier input. 4,367,721, Cl. 123-617.000.

BP Chemicals Limited: *See*—
Dickinson, Kathleen F., 4,368,345, Cl. 585-643.000.
Downs, Gordon W., 4,368,302, Cl. 526-105.000.

Brabbee, Gregory W.: *See*—
Dailey, Thomas H.; and Brabbee, Gregory W., 4,367,869, Cl. 269-324.000.

Bradbury, Ray. Nail driver accessor having a nail holder mechanism. 4,367,778, Cl. 145-30.00R.

Braden, Donald G.: *See*—
Krueck, John F.; Braden, Donald G.; and Askins, William J., 4,367,673, Cl. 91-437.000.

Bradley, Robert F., to Micro-Circuits Company. Time-lapse indicator or the like. 4,367,957, Cl. 368-114.000.

Bradshaw, Norman F., to Haden Schweitzer Corporation. Air conditioning apparatus and method for paint spray booths. 4,367,787, Cl. 165-35.000.

Brand, Glen. Four-way directional valve. 4,367,763, Cl. 137-106.000.

Brandenstein, Manfred: *See*—
Olschewski, Armin; Brandenstein, Manfred; and Walter, Lothar, 4,367,904, Cl. 384-95.000.

Brandes, Wilhelm; and Daum, Werner, to Bayer Aktiengesellschaft. Combating fungi with pyrazole-substituted oximino-cyano-acetamide derivatives. 4,368,202, Cl. 424-273.00P.

Brannegan, Daniel P.: *See*—
Brennan, Thomas M.; Brannegan, Daniel P.; Kuhla, Donald E.; and Weeks, Paul D., 4,368,331, Cl. 549-417.000.

Branson International Plasma Corporation: *See*—
Welty, Joseph M., 4,368,419, Cl. 323-239.000.

Braun, Albert; Portz, Willi; Strauss, Georg; and Delhey, Hans-Martin, to Hoechst Aktiengesellschaft. Process for the manufacture of desulfurizing agents for crude iron or steel melts. 4,368,071, Cl. 75-0.50R.

Bray, Geddes A.; and Holker, Richard J., to Mather & Platt Limited. Installation control valves. 4,367,861, Cl. 251-61.000.

Breister, Sigmund; and Reiner, Joseph R., to Olin Corporation. Use of the sodium salt of 2-mercaptopyridine-N-oxide to separate gold from acidic solutions. 4,368,073, Cl. 75-108.000.

Brennan, Thomas M.; Brannegan, Daniel P.; Kuhla, Donald E.; and Weeks, Paul D., to Pfizer Inc. 3,4-Dihalo-tetrahydrophyran-5-one useful as intermediates for the preparation of gamma-pyrones. 4,368,331, Cl. 549-417.000.

Brenner, Walter: *See*—
Rugg, Barry A.; and Brenner, Walter, 4,368,079, Cl. 127-1.000.

British Aerospace: *See*—
Henderson, Ross A.; and Gregory, Douglas A., 4,368,415, Cl. 322-2.00R.

Bros, Daniel M.; Bartel, William G.; and Larsen, LaVerne M., to Hot-Shot Products Co. Animal prod. 4,367,843, Cl. 231-2.00E.

Brown, Boveri & Cie Aktiengesellschaft: *See*—
Rohr, Franz-Josef; and Krapf, Rudolf, 4,368,431, Cl. 324-464.000.

Brown, Leonard; and Goebel, Guenter R., to Crossley Machine Company, Inc. Mold box wedging assembly. 4,368,020, Cl. 425-195.000.

Brown, Robert L., to AMF Incorporated. Cable transfer sub for drill pipe and method. 4,367,797, Cl. 166-380.000.

Bruderhaus Maschinen GmbH: *See*—
Schoffmann, Ernst; and Czernuch, Alexander, 4,368,102, Cl. 162-258.000.

Bruel, Michel; and Floccari, Michel, to Commissariat a l'Energie Atomique. Process for doping semiconductors. 4,368,083, Cl. 148-1.500.

Brumfield, Robert C. Method of winding a mass transfer device and product. 4,368,124, Cl. 210-321.300.

Brummett, Charles R.; Crumley, J. A.; Shaak, Ray N.; and Whitaker, Dewey R., to AMP Incorporated. Printed circuits. 4,368,281, Cl. 523-458.000.

Brundage, Richard B.: *See*—
Terpstra, Daniel A.; and Brundage, Richard B., 4,367,665, Cl. 83-100.000.

Brunswick Corporation: *See*—
Karpathian, Kerry; and Trowbridge, Darrell L., 4,367,659, Cl. 74-501.00R.

Bryan, James S., to Pennsylvania Scale Company. Load cell for use with electronic counting and weighing scales. 4,367,801, Cl. 177-211.000.

Bucheister, Henry C. Thermostatic switch. 4,368,451, Cl. 337-380.000.

Buck, Josef J., to Magnetic Controls Company. Circuit monitoring jack. 4,367,907, Cl. 339-113.00R.

Buckley, John J.: *See*—
Logan, Dale R.; and Buckley, John J., 4,367,913, Cl. 350-500.000.

Bucovaz, Edsel T.; Whybrew, Walter D.; and Morrison, John C., to Research Corporation. Diagnostic test for the detection of cancer. 4,368,262, Cl. 435-23.000.

Budel, Eduard J.; Fehrmann, Heinrich; and de Kok, Johan, to Wavin B.V. Centering device for shaping tools of extrusion presses. 4,368,026, Cl. 425-466.000.

Budzich, Tadeusz. Reciprocating controls of a gas compressor using free floating hydraulically driven piston. 4,368,008, Cl. 417-46.000.

Budzinski, John C.; and Levitt, George, to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. 4,368,067, Cl. 71-92.000.

Buente, Stephen M., to Eaton Corporation. Acting valve gear. 4,367,701, Cl. 123-90.550.

Buketov, Eslambek A.: *See—*
Abishev, Dzhantore N.; Buketov, Evnei A.; Shindauletova, Aigul T.; Baltynova, Nazymkul; Babskaya, Ida N.; Kobzhasov, Abubakir K.; Malyshev, Vitaly P.; Bauer, Ivan K.; Mukhamedinov, Murat M.; Kusainov, Temirkhan A.; Orazalina, Katken N.; and Buketov, Eslambek A., 4,368,176, Cl. 423-25.000.

Buketov, Evnei A.: *See—*
Abishev, Dzhantore N.; Buketov, Evnei A.; Shindauletova, Aigul T.; Baltynova, Nazymkul; Babskaya, Ida N.; Kobzhasov, Abubakir K.; Malyshev, Vitaly P.; Bauer, Ivan K.; Mukhamedinov, Murat M.; Kusainov, Temirkhan A.; Orazalina, Katken N.; and Buketov, Eslambek A., 4,368,176, Cl. 423-25.000.

Bulgozdy, Eugene L.: *See—*
Biegen, James R.; Zapfe, Helmut H.; and Bulgozdy, Eugene L., 4,368,222, Cl. 427-340.000.

Bunker Ramo Corporation: *See—*
Lovering, Peter, 4,368,517, Cl. 364-428.000.

Burinsky, Stanislav V.; Volf, Leonard A.; and Alexandrov, Sasho P. Porous open-cell filled reactive material. 4,368,277, Cl. 521-84.000.

Burke Company, The: *See—*
Holt, Neil L., 4,367,892, Cl. 294-89.000.

Burkhart, Gerald W.: *See—*
Ceska, Gary W.; and Burkhart, Gerald W., 4,368,077, Cl. 106-96.000.

Burlington Industries, Inc.: *See—*
Irby, Enek E., 4,367,849, Cl. 242-18.0PW.
Newcomb, Kermit T., 4,367,773, Cl. 139-452.000.

Butler Manufacturing Company: *See—*
Johnson, Claris E.; and Crump, Hubert C., 4,367,578, Cl. 29-429.000.

C. L. Frost & Son, Inc.: *See—*
Nauta, Randal W., 4,367,905, Cl. 308-182.000.

Cahen, David: *See—*
Manassen, Joost; Cahen, David; and Hodes, Gary, 4,368,216, Cl. 427-74.000.

Caldwell, Donald L.; and Hazelrigg, Mark J., Jr., to Dow Chemical Company, The. Substituted cobalt oxide spinels. 4,368,110, Cl. 204-290.00F.

Cameron, Anthony D.: *See—*
Speirs, Graeme K.; and Cameron, Anthony D., 4,367,571, Cl. 24-249.00R.

Cameron, Donald C.; Stufflebeam, Donnie L.; and Ekey, John W., to Dow Chemical Company, The. Pressure transducer body. 4,367,651, Cl. 73-706.000.

Cann, Gordon L. Rankine cycle engine. 4,367,629, Cl. 60-669.000.

Canon Kabushiki Kaisha: *See—*
Ichiyanagi, Toshikazu, 4,367,936, Cl. 354-173.000.
Kato, Hiroaki; Hamana, Junji; Sakai, Akeo; Kawakami, Yoshio; Goto, Atsushi; and Amano, Saichiro, 4,368,496, Cl. 360-110.000.
Kawai, Tohru; and Masunaga, Makoto, 4,367,931, Cl. 354-23.00D.
Kitamura, Takashi, 4,367,912, Cl. 350-6.800.
Mashimo, Yukio; and Iwashita, Tomonori, 4,367,937, Cl. 354-173.000.
Sawamua, Mitsuharu; and Ito, Susumu, 4,367,921, Cl. 350-164.000.
Suzuki, Koji, 4,367,948, Cl. 355-14.00D.
Takimoto, Hiroyuki, 4,368,490, Cl. 358-217.000.
Tazaki, Shigemitsu, 4,368,413, Cl. 318-687.000.
Uehara, Haruo; Matsumoto, Shigeyuki; Takatori, Yasushi; Ohta, Tokuya; and Matsufuji, Yohji, 4,368,476, Cl. 346-140.00R.
Yoshida, Syozo; and Saito, Syuichiro, 4,367,938, Cl. 354-234.000.

Canron Corp.: *See—*
Stewart, John K.; Shupe, Charles A.; and von Beckmann, Helmuth, 4,367,681, Cl. 104-7.00B.

Carfer S.r.l.: *See—*
Carraroli, Dario, 4,368,001, Cl. 414-331.000.

Carl Still GmbH & Co. KG, Firma: *See—*
Weinzierl, Klaus; and Tippmer, Kurt, 4,368,103, Cl. 202-99.000.

Carlemalm, Eric, to Chemische Werke Lowi G.m.b.H. Embedding medium suitable for the preparation of thin sections of embedded biological materials. 4,368,312, Cl. 526-323.200.

Carlson, David J.; and Lehmann, William L., to RCA Corporation. Phase locked loop tuning system including a prescaler conditioned to oscillate at an out-of-band frequency. 4,368,540, Cl. 455-180.000.

Carmien, Joseph A. Bushing for attaching fiberglass tool handles. 4,367,969, Cl. 403-253.000.

Caronna, Cosimo: *See—*
Leech, Brad G.; and Caronna, Cosimo, 4,367,635, Cl. 62-259.100.

Carpools Environmental Protection Services Limited: *See—*
Wilson, Gerald E., 4,368,119, Cl. 210-137.000.

Carra, Sergio; Santacesaria, Elio; Morbidelli, Massimo; Codignola, Franco; and DiFiore, Lucio, to Sisas S.p.A. Process for the separation of metaxylene from mixtures of aromatic hydrocarbons. 4,368,347, Cl. 585-828.000.

Carraroli, Dario, to Carfer S.r.l. Machine, particularly for loading and unloading ceramic material on to and from stake trucks. 4,368,001, Cl. 414-331.000.

Carrier Corporation: *See—*
Leech, Brad G.; and Caronna, Cosimo, 4,367,635, Cl. 62-259.100.

Carsac, Claude: *See—*
de Sivry, Bruno; Sudreau, Bernard; Carsac, Claude; Hamon, Jean-Pierre; and Fuzeau, Michel, 4,368,374, Cl. 219-121.0EN.

Carter-Wallace, Inc.: *See—*
Drucker, Jacob; and Shea, Frank, 4,368,184, Cl. 424-66.000.

Cartwright, Frederick D. Stabilization of particulate material. 4,367,984, Cl. 405-258.000.

Casada, James H.: *See—*
Swetnam, Larry D.; Casada, James H.; and Walton, Linus R., 4,367,621, Cl. 56-10.200.

Causer, Roy, to United Kingdom Atomic Energy Authority. Manipulators. 4,367,998, Cl. 414-4.000.

Cavanaugh, John B.: *See—*
DiDomenico, Robert A.; Cavanaugh, John B.; and Kimberley, John A., 4,367,714, Cl. 123-449.000.

Centro Ricerche Fiat S.p.A.: *See—*
Moretti, Luciano; and Dotti, Giulio, 4,367,765, Cl. 137-881.000.

Centro Sperimentale Metallurgico S.p.A.: *See—*
Praitoni, Alberto; and Spaccarotella, Antonio, 4,367,784, Cl. 164-473.000.

Ceska, Gary W.; and Burkhart, Gerald W., to Polysar International, S.A. Latex compositions and products made therefrom. 4,368,077, Cl. 106-96.000.

Cha, Chang Y., to Occidental Oil Shale, Inc. Method for forming an in situ oil shale retort. 4,367,901, Cl. 299-2.000.

Chadshay, Roman, to Combustion Engineering, Inc. Stationary flame scanner for tilting burner. 4,368,031, Cl. 431-79.000.

Chamberlain, James W.; and Goldschmidt, Arthur M., to RCA Corporation. Vertical sync independent digital skew servo. 4,368,492, Cl. 360-70.000.

Champion Spark Plug Company: *See—*
Hinton, Jonathan W.; Powell, Frederick J.; and Matz, Robert W., 4,368,166, Cl. 264-61.000.

Chance, Slim; and Gray, William T. Clutched tuning peg handle. 4,367,671, Cl. 84-306.000.

Chang, Paul P. H.; and Chu, Chen-Shin. Game ball. 4,367,873, Cl. 273-60.00R.

Channing, Harry M.; Nees, John M.; and Eberle, William J., to General Battery Corporation. Method for manufacturing a battery having a temporary side terminal thereon. 4,367,582, Cl. 29-623.100.

Charon, Clarence W., to Owens-Corning Fiberglas Corporation. Glass fiber compounding in gaskets as asbestos replacement. 4,368,164, Cl. 264-37.000.

Cheburashko, Boris P.: *See—*
Dobrokhtova, Marina K.; Evseev, Vladimir A.; Artsis, Evgeny S.; Enenshtein, Gennady A.; Cheburashko, Boris P.; Platoshkina, Maria G.; Nefedov, Vladimir P.; and Valyshkina, Ljudmila I., 4,368,318, Cl. 528-326.000.

Chemische Werke Huels, A.G.: *See—*
Frese, Albert; and Baxmann, Fritz, 4,368,291, Cl. 525-53.000.

Chemische Werke Huls AG: *See—*
Mumcu, Salih; and Feldmann, Rainer, 4,368,090, Cl. 156-283.000.
Sielfeld, Gilbert; and Sunder-Plassmann, Paul, 4,368,307, Cl. 526-202.000.

Chemische Werke Lowi G.m.b.H.: *See—*
Carlemalm, Eric, 4,368,312, Cl. 526-323.200.

Chemokomplex Vegyipari Gep-es Berendezes Export-Import Vallalat: *See—*
Puskas, Ferenc, 4,368,273, Cl. 501-155.000.

Chen, Chi-wan; and Schwing, Gregory W., to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. 4,368,069, Cl. 71-93.000.

Chen, Muh-fa: *See—*
Kreitzer, Melvyn H.; and Chen, Muh-fa, 4,367,928, Cl. 350-453.000.

Cheng, Paul J.: *See—*
Mills, King L.; and Cheng, Paul J., 4,368,182, Cl. 423-450.000.

Chernov, Gennady M.: *See—*
Vannikov, Anatoly V.; Glotov, Vadim G.; Grishina, Antonina D.; Ivanova, Valentina N.; Fedorov, Vladimir S.; Chernov, Gennady M.; and Kazarinov, Vladimir E., 4,368,254, Cl. 430-333.000.

Chester, Arthur W.; Cormier, William E., Jr.; and Stover, William A., to Mobil Oil Corporation. Octane and total yield improvement in catalytic cracking. 4,368,114, Cl. 208-120.000.

Chianelli, Russell R.; Pecoraro, Theresa A.; and Dines, Martin B., to Exxon Research and Engineering Co. Catalysts comprising layered chalcogenides of group IVb-group VIIb prepared by a low temperature nonaqueous precipitate technique. 4,368,115, Cl. 208-215.000.

Ching, Ta-Yen, to General Electric Company. Alkoxysilanes and method for making. 4,368,241, Cl. 428-447.000.

Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt.: *See—*
Szoke, Sandor; Lugosi, Gyorgy; Bakonyi, Maria; Ghyczy, Jeno; and Csermely, Gyorgy, 4,368,328, Cl. 548-306.000.

Chirash, William: *See—*
Inamorato, Jack T.; and Chirash, William, 4,368,147, Cl. 252-545.000.

Chisso Corporation: *See—*
Sato, Akihiro; Uwai, Toshihiro; Hanari, Tohru; Kikuta, Kazutsune; and Miyajima, Masazumi, 4,368,304, Cl. 526-114.000.

Chiyoda Chemical Engineering & Construction Co., Ltd.: *See—*
Miyoshi, Hajime; Okabayashi, Ikuo; and Asanagi, Etsuo, 4,367,986, Cl. 405-266.000.
Yanagiako, Hiroshi; Kanai, Toshio; Kogawa, Yoshio; Yoshida, Michihiro; Mashino, Zenji; Shimizu, Shin-ichi; Sugiya, Teruo; and Onozaki, Masaki, 4,368,060, Cl. 55-73.000.

Chmarzynski, Andrzej: *See*—
Tomaszewski, Jerzy; Chmarzynski, Andrzej; and Nowakowski, Rafal, 4,367,985, Cl. 405-264.000.

Chopping, Geoffrey, to Plessey Company Limited, The. Frame aligner for digital telecommunications exchange system. 4,368,531, Cl. 370-100.000.

Chowa Giken Kabushiki-Kaisha: *See*—
Daisyaku, Ikuo, 4,368,404, Cl. 313-497.000.

Chu, Chen-Shin: *See*—
Chang, Paul P. H.; and Chu, Chen-Shin, 4,367,873, Cl. 273-60.00R.

Chung, Li-Jin W.; Moore, Ernest P.; Porter, Glendon R.; and Rizzo, Joseph F., to Bell Telephone Laboratories, Incorporated. Automatically adjustable bidirectional-to-unidirectional transmission network. 4,368,361, Cl. 179-170.200.

Chung, Li-Jin W.; Moore, Ernest P.; Porter, Glendon R.; and Rizzo, Joseph F., to Bell Telephone Laboratories, Incorporated. Automatic telephone loaded/nonloaded facility type identification circuit. 4,368,362, Cl. 179-170.200.

Ciba-Geigy AG: *See*—
Borg, Thomas G., 4,368,255, Cl. 430-351.000.
Mollet, Herbert; and Wyrsch, Dieter, 4,368,256, Cl. 430-359.000.

Ciba-Geigy Corporation: *See*—
Eckhardt, Claude; and Holzle, Gerd, 4,368,053, Cl. 8-102.000.
Green, George E.; and Waterhouse, John S., 4,368,253, Cl. 430-326.000.
Kunz, Walter, 4,368,327, Cl. 548-262.000.
Lohse, Friedrich; and Trachsler, Dieter, 4,368,317, Cl. 528-323.000.
Maier, Ludwig, 4,368,162, Cl. 260-502.50G.

Cinelli Cino & C. S.r.l.: *See*—
Nieddu, Mario, 4,367,896, Cl. 297-195.000.

Citizen Watch Company Limited: *See*—
Kawahara, Hisashi; Hanaoka, Tadashi; and Yamauchi, Masamichi, 4,367,958, Cl. 368-188.000.
Matsumoto, Masataka; and Nakajima, Kouichi, 4,368,369, Cl. 200-264.000.

CKD Corporation: *See*—
Hayakawa, Masatoshi; Ogi, Koei; and Takahara, Michio, 4,367,574, Cl. 29-25.190.

Claas, Helmut, to Claas OHG. Harvester-thresher combine. 4,367,757, Cl. 130-27.00T.

Claas OHG: *See*—
Claas, Helmut, 4,367,757, Cl. 130-27.00T.
Roderfeld, Heinrich; and Kampwerth, August, 4,367,756, Cl. 130-23.000.

Clarion Co., Ltd.: *See*—
Ariga, Shoji, 4,368,229, Cl. 428-120.000.

Clark, John I., to Pitney Bowes, Inc. Postage meter value selecting system. 4,367,676, Cl. 101-91.000.

Clark, Noel A.; and Lagerwall, Sven T. Chiral smectic C or H liquid crystal electro-optical device. 4,367,924, Cl. 350-334.000.

Clausen, Eva: *See*—
Gratzfeld, Everhard; Clausen, Eva; Reinhardt, Helmut; and Schaefer, Hans, 4,368,075, Cl. 106-20.000.

Cleasby Manufacturing Co., Inc.: *See*—
McCarthy, Bartholomew J., 4,367,857, Cl. 248-74.00R.

Clifton, Hampton A. Sign for coin-operated machine. 4,367,605, Cl. 40-584.000.

Clinard, Glenn G.; Guth, Kenneth C.; Mulhollam, Gail R.; and Volk, Frank J., to United States of America, Air Force. Dual mode moving target sensor. 4,368,460, Cl. 340-522.000.

Clip Strip Corporation: *See*—
Lewis, Lawrence A., 4,367,819, Cl. 211-59.100.

Clough, Douglas O.: *See*—
Parker, Alan; Dickinson, Peter J.; Clough, Douglas O.; and Farnhill, William M., 4,367,623, Cl. 57-263.000.

Clowe, Henry W. Adjustable glue applicator rolls for container labeling machine. 4,368,097, Cl. 156-578.000.

Coal Industry (Patents) Limited: *See*—
Oven, Terence; and Higgs, Robert H., 4,367,898, Cl. 299-1.000.
Whittaker, Raymond A.; Lukaszewicz, Raymond; and Ford, John A., 4,367,899, Cl. 299-1.000.

Coated Seed Limited: *See*—
Lloyd, John M., 4,367,609, Cl. 47-57.600.

Coates, Philip V.: *See*—
Forse, David P. S.; Franks, Richard W.; Bamford, Nigel T.; Coates, Philip V.; and Thorscov, Jan C., 4,368,456, Cl. 340-146.30Q.

Coderre, James C.: *See*—
Tung, Chi F.; and Coderre, James C., 4,367,920, Cl. 350-105.000.

Codex Corporation: *See*—
Miller, Charles K.; and Northam, William D., 4,368,434, Cl. 329-50.000.

Codignola, Franco: *See*—
Carra, Sergio; Santacesaria, Elio; Morbidelli, Massimo; Codignola, Franco; and DiFiore, Lucio, 4,368,347, Cl. 585-828.000.

Codrington, Ernest R. Diesel engine speed governor. 4,367,709, Cl. 123-339.000.

Coghill, Marvin: *See*—
Bloy, Graham P., 4,368,435, Cl. 330-133.000.

Colburn, William A., to Magnesep Corporation. Method of separating isotopes. 4,368,387, Cl. 250-251.000.

Coleman, Ernest A., to Dart Industries Inc. Fast crystallizing polyethylene terephthalate containing neopentyl dibenzoate. 4,368,285, Cl. 524-293.000.

Colgate-Palmolive Company: *See*—
Cross, Henry D., III; Eaton, Charles C., Jr.; Larsen, John; and McGregor, Rob R., 4,367,600, Cl. 36-127.000.
Inamorato, Jack T.; and Chirash, William, 4,368,147, Cl. 252-545.000.
Kaeser, James A., 4,368,134, Cl. 252-140.000.
Smith, John F., 4,368,089, Cl. 156-243.000.

Collins, John S.: *See*—
Ball, Christopher; Collins, John S.; and Hamlyn, Paul F., 4,368,263, Cl. 435-47.000.

Coloplast A/S: *See*—
Poulsen, Finn; and Samuelsen, Peter, 4,367,732, Cl. 128-156.000.

Combustion Engineering, Inc.: *See*—
Chadshay, Roman, 4,368,031, Cl. 431-79.000.
Jamison, Thomas D., 4,368,429, Cl. 324-225.000.
Shapiro, Maurice S., 4,367,981, Cl. 405-195.000.

Commins, Alfred D.: *See*—
Gilb, Tyrell T.; and Commins, Alfred D., 4,367,973, Cl. 403-405.000.

Commissariat a l'Energie Atomique: *See*—
Bachet, Bernard; and Doucelance, Claude, 4,368,422, Cl. 324-64.000.
Bruel, Michel; and Floccari, Michel, 4,368,083, Cl. 148-1.500.
Mottier, Patrick; and Valette, Serge, 4,367,916, Cl. 350-96.120.

Communications Satellite Corporation: *See*—
Uzunoglu, Vasil, 4,368,542, Cl. 455-316.000.

Compagnie Francaise des Petroles: *See*—
de Sivry, Bruno; Sudreau, Bernard; Carsac, Claude; Hamon, Jean-Pierre; and Fuzeau, Michel, 4,368,374, Cl. 219-121.0EN.

Compagnie Francaise d'Etudes et de Construction "Technip": *See*—
Mestrallet, Joelle; Heck, Gerard; and Kaiser, Victor, 4,368,061, Cl. 62-28.000.

Conroy, Ernest F., Jr.; and Elms, Robert T., to Westinghouse Electric Corp. Solid-state load protection system having an improved inverse time delay circuit. 4,368,500, Cl. 361-94.000.

Controlec Limited: *See*—
Tyers, Paul D., 4,367,975, Cl. 404-6.000.

Cook, George E.: *See*—
Merrick, George J.; Cook, George E.; and Modglin, Donald D., 4,368,375, Cl. 219-125.120.

Cooper, Sidney; and Jacob, Ezekiel J., to Ani-Live Film Service Inc. Dry transfer of electrophotographic images of an intumescent electroscopic thermoadhesive tower. 4,368,250, Cl. 430-109.000.

Cordon, William A. Method and apparatus for storing energy. 4,367,788, Cl. 165-53.000.

Coren, Alfred S. Socket retainers. 4,367,971, Cl. 403-330.000.

Cormier, William E., Jr.: *See*—
Chester, Arthur W.; Cormier, William E., Jr.; and Stover, William A., 4,368,114, Cl. 208-120.000.

Cousins, Steven J. Adjustable seat for the handicapped. 4,367,897, Cl. 297-284.000.

Covey, Ray M., Jr. Apparatus for vaporizing fuel for engine in conjunction with carburetor. 4,368,163, Cl. 261-39.00R.

CPC International Inc.: *See*—
Hinz, Gerhard; and Dinessen, Joseph, 4,367,953, Cl. 366-132.000.

Cranston, Dean H., to Eaton Corporation. Serial impact calculator printer with dual feed and validation mechanism. 4,367,964, Cl. 400-605.000.

Crawford, Robert J., to Procter & Gamble Company, The. Halogenation process in the presence of cyanoquinone catalyst. 4,368,140, Cl. 252-426.000.

Crawley, Barry J., to Teledyne Industries, Inc. Line follower. 4,368,462, Cl. 340-723.000.

Cross, Henry D., III; Eaton, Charles C., Jr.; Larsen, John; and McGregor, Rob R., to Colgate-Palmolive Company. Golf shoe with improved transverse traction. 4,367,600, Cl. 36-127.000.

Crossley Machine Company, Inc.: *See*—
Brown, Leonard; and Goebel, Guenter R., 4,368,020, Cl. 425-195.000.

Crowley, Ralph P.; and Pope, Max D., to Phillips Petroleum Company. Maximizing flow of absorption liquid in absorption methods. 4,368,058, Cl. 55-21.000.

Crumley, J. A.: *See*—
Brummett, Charles R.; Crumley, J. A.; Shaak, Ray N.; and Whitaker, Dewey R., 4,368,281, Cl. 523-458.000.

Crummer, Robert R.: *See*—
Barkis, Edward; Crummer, Robert R.; and Joyner, James M., 4,368,233, Cl. 428-245.000.

Crump, Hubert C.: *See*—
Johnson, Claris E.; and Crump, Hubert C., 4,367,578, Cl. 29-429.000.

Csepel Muvek Tervezo es Kutato Intezete: *See*—
Stefan, Mihaly; Hegedus, Zoltan; Bagi nee Schmidt, Terezia; Dorner, Henrik; Kanyo, Miklos; and Fuzesi, Pal, 4,368,221, Cl. 427-305.000.

Csermely, Gyorgy: *See*—
Szoke, Sandor; Lugosi, Gyorgy; Bakonyi, Maria; Ghyczy, Jeno; and Csermely, Gyorgy, 4,368,328, Cl. 548-306.000.

Cubic Western Data: *See*—
Toth, John E., 4,367,666, Cl. 83-203.000.

Cuiper, Glen H.: *See*—
Ames, Thomas J.; and Cuiper, Glen H., 4,367,980, Cl. 405-169.000.

Cuisinarts, Inc.: *See*—
Shibata, Koichiro, 4,367,667, Cl. 83-356.300.

Curtis, Calvin E.: *See*—
McCartny, Gerald A.; and Curtis, Calvin E., 4,368,035, Cl. 432-13.000.

Czebiniak, Andrew J.: *See*—
Janisiewicz, Stanley; Levie, Michael M.; and Czebiniak, Andrew J., 4,367,584, Cl. 29-837.000.
Czernuch, Alexander: *See*—
Schoffmann, Ernst; and Czernuch, Alexander, 4,368,102, Cl. 162-258.000.
Dailey, Thomas H.; and Brabbee, Gregory W. Stirrup attachment for surgical table. 4,367,869, Cl. 269-324.000.
Daimler-Benz Aktiengesellschaft: *See*—
Hafner, Gunther; and Haepp, Hans-Josef, 4,367,786, Cl. 165-10.000.
Scheying, Heinz, 4,367,706, Cl. 123-300.000.
Tomforde, Johann, 4,368,505, Cl. 362-80.000.
Dainippon Screen Seizo Kabushiki Kaisha: *See*—
Hohki, Tetsuo, 4,367,926, Cl. 350-358.000.
Sakamoto, Takashi, 4,368,488, Cl. 358-208.000.
Daisyaku, Ikuo, to Chowa Giken Kabushiki-Kaitha. Matrix-type fluorescent display device. 4,368,404, Cl. 313-497.000.
Dale, John C.; Rines, Glen A.; and Fuller, Harrison W., to Sanders Associates, Inc. Fiber optic magnetic sensors. 4,368,430, Cl. 324-244.000.
Dales, John R. M., to Beecham Group Limited. p-Hydroxymandelic acid. 4,368,334, Cl. 562-470.000.
Dali, Carmelo, to Novametrix Medical Systems, Inc. Nasal cannula. 4,367,735, Cl. 128-207.180.
Danzig, Ivan F., to General Electric Company. Zinc electrode for use in rechargeable electrochemical cells. 4,368,244, Cl. 429-217.000.
Darnall, Tom A., Jr. Acoustic dampening assembly for record player turntable. 4,368,530, Cl. 369-264.000.
Darrow, John O. G., to American Standard Inc. Fail-safe low-pass filtering circuit. 4,368,440, Cl. 333-172.000.
Dart Industries Inc.: *See*—
Coleman, Ernest A., 4,368,285, Cl. 524-293.000.
Daughters, James R., to Wordex. Refillable typewriter ribbon cartridge. 4,367,963, Cl. 400-208.000.
Daum, Werner: *See*—
Brandes, Wilhelm; and Daum, Werner, 4,368,202, Cl. 424-273.00P.
Davis, Kenneth L., to United States of America, Navy. Silicon barrier Josephson junction configuration. 4,368,479, Cl. 357-5.000.
Davis, Robert, to Summagraphics Corporation. Digitizer with floating scan. 4,368,352, Cl. 178-19.000.
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Dawson, Terry: *See*—
Donley, Robert P.; and Dawson, Terry, 4,368,349, Cl. 174-52.0PE.
DBX, Inc.: *See*—
Adams, Robert W., 4,368,425, Cl. 324-158.00T.
de la Messuziere, Philippe R.: *See*—
Dulondel, Jacques; and de la Messuziere, Philippe R., 4,367,863, Cl. 254-391.000.
Dean, Richard T.: *See*—
Shen, Tsung-Ying; Durette, Philippe L.; Dorn, Conrad P., Jr.; Doherty, James B.; and Dean, Richard T., 4,368,190, Cl. 424-88.000.
Deepsea Ventures, Inc.: *See*—
Latimer, John P.; and Hall, John H., 4,367,601, Cl. 37-57.000.
Deere & Company: *See*—
Oeth, James F., 4,367,705, Cl. 123-198.0DB.
Wittren, Richard A., 4,367,803, Cl. 180-153.000.
Degoulet, Gabriel; Gaucher, Gilbert; and Gauthier, Christian, to Etablissement Public de Diffusion dit "Telediffusion de France"; and L'Etat Francais, represente par le Secretaire d'Etat aux Postes et Telecommunications (Centre National d'Etudes des Telecommunications). Television system using a marking code superimposed on the picture. 4,368,486, Cl. 358-146.000.
Degussa Aktiengesellschaft: *See*—
Aldinger, Werner; Anzt, Helmut; Morlock, Gerhard; and Schaufler, Hans-Peter, 4,368,320, Cl. 528-355.000.
Gratzfeld, Everhard; Clausen, Eva; Reinhardt, Helmut; and Schaefer, Hans, 4,368,075, Cl. 106-20.000.
de Kok, Johan: *See*—
Budel, Eduard J.; Fehrmann, Heinrich; and de Kok, Johan, 4,368,026, Cl. 425-466.000.
Delalande S.A.: *See*—
Ancher, Jean-Francois R.; Lacour, Alain P.; Moinet, Gerard H.; and Tisne-Versailles, Jacky A., 4,368,199, Cl. 424-250.000.
Deleris, Robert, to Regie Nationale des Usines Renault. Spark coil control device for internal combustion engine equipped with electronic ignition advance. 4,367,710, Cl. 123-416.000.
Delhey, Hans-Martin: *See*—
Braun, Albert; Portz, Willi; Strauss, Georg; and Delhey, Hans-Martin, 4,368,071, Cl. 75-0.50R.
DeMartino, Kevin: *See*—
Lisle, Hampton H.; and DeMartino, Kevin, 4,368,468, Cl. 343-16.00M.
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Ehmke, Richard J.; and Linsenmeyer, Arthur, 4,367,848, Cl. 239-665.000.
Denkler, Maria: *See*—
Bayerlein, Friedrich J.; Haberedер, Peter P.; Denkler, Maria; and Keramaris, Nikolaos, 4,368,324, Cl. 536-114.000.
de Pous, Olivier, to Battelle Memorial Institute. Composition for the storage of hydrogen and method of making the composition. 4,368,143, Cl. 252-457.000.
Derbigum America Corporation: *See*—
Gorgati, Romolo, 4,368,228, Cl. 428-110.000.
Derechinsky, Victor E. Clip-holder instrument for clipping blood vessels. 4,367,746, Cl. 128-325.000.
Deric, J. Mark: *See*—
Doane, John C.; Deric, J. Mark; and Roberts, Gary K., 4,367,810, Cl. 187-29.00R.
de Sivry, Bruno; Sudreau, Bernard; Carsac, Claude; Hamon, Jean-Pierre; and Fuzeau, Michel, to Compagnie Francaise des Petroles. Vacuum chamber for electron beam butt welding of pipes. 4,368,374, Cl. 219-121.0EN.
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Bayerlein, Friedrich J.; Haberedер, Peter P.; Denkler, Maria; and Keramaris, Nikolaos, 4,368,324, Cl. 536-114.000.
Diamant, Frederick J. Shoe sole structure having controlled slippage. 4,367,599, Cl. 36-44.000.
Diaz, Zaida, to Shell Oil Company. Process for the removal of H_2S and CO_2 from gaseous streams. 4,368,178, Cl. 423-226.000.
Dickert, Joseph J., Jr.: *See*—
Audeh, Constandi A.; and Dickert, Joseph J., Jr., 4,368,126, Cl. 210-663.000.
Dickinson, Kathleen F., to BP Chemicals Limited. Catalyst for disproportionation of olefins. 4,368,345, Cl. 585-643.000.
Dickinson, Lawrence C. Skiving and roller burnishing tool. 4,367,576, Cl. 29-90.00R.
Dickinson, Peter J.: *See*—
Parker, Alan; Dickinson, Peter J.; Clough, Douglas O.; and Farnhill, William M., 4,367,623, Cl. 57-263.000.
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Howell, Stephen L.; and Dietrich, Ralph N., 4,367,670, Cl. 84-1.260.
Diev, Valery N.: *See*—
Rubinshtein, Georgy M.; Yatsenko, Sergei P.; Diev, Valery N.; Zlokazova, Tatyana M.; Fomin, Eduard S.; Moskov, Ruslan N.; Grigorieva, Anastasia D.; Davydov, Ivan V.; Starkov, Evgeny N.; Ovsyannikov, Vladimir I.; Eremeev, Arnold F.; and Lavrenchuk, Vladimir N., 4,368,108, Cl. 204-43.00R.
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Carra, Sergio; Santacesaria, Elio; Morbidelli, Massimo; Codignola, Franco; and DiFiore, Lucio, 4,368,347, Cl. 585-828.000.
Dijkman, Marcellinus F. H., to U.S. Philips Corporation. Method and arrangement for determining the velocity of a vehicle. 4,368,428, Cl. 324-178.000.
Dilthey, Ulrich; Eichhorn, Friedrich; Hirsch, Peter; Holbach, Peter; and Lettner, Kurt, to Messer Griesheim. Process for the submerged-arc welding of light metals such as aluminum and aluminum alloys. 4,368,371, Cl. 219-73.000.
Dines, Martin B.: *See*—
Chianelli, Russell R.; Pecoraro, Theresa A.; and Dines, Martin B., 4,368,115, Cl. 208-215.000.
Dinessen, Joseph: *See*—
Hinz, Gerhard; and Dinessen, Joseph, 4,367,953, Cl. 366-132.000.
Dinicola, Nicholas F.: *See*—
Vallieres, Theodore E., Jr.; and Dinicola, Nicholas F., 4,367,781, Cl. 160-332.000.
Doane, John C.; Deric, J. Mark; and Roberts, Gary K., to Otis Elevator Company. Elevator car and door motion interlocks. 4,367,810, Cl. 187-29.00R.
Dobrokhtova, Marina K.; Evseev, Bladimir A.; Artsis, Evgeny S.; Eaenshtein, Gennady A.; Cheburashko, Boris P.; Platoshkina, Maria G.; Nefedov, Vladimir P.; and Valyshkina, Ljudmila I. Preparation of dodecalactam polymers wherein molten monomer is filtered prior to polymerization. 4,368,318, Cl. 528-326.000.
Dr. Johannes Heidenhain GmbH: *See*—
Bayer, Erich, 4,368,245, Cl. 430-5.000.
Dr. Madaus & Co.: *See*—
Madaus, Rolf; Gorler, Klaus; and Molls, Werner, 4,368,195, Cl. 424-195.000.
Dodt, William C.: *See*—
Arter, Nelson K.; Dodt, William C.; and Farel, Charles A., 4,367,947, Cl. 355-75.000.
Doerges, Alexander; Kriebel, Manfred; and Schlauer, Johann, to Metallgesellschaft Aktiengesellschaft. Process of removing H_2S, CO_2, COS and mercaptans from gases by absorption. 4,368,059, Cl. 55-73.000.
Doerschuk, David C.: *See*—
Alexander, Graham H.; and Doerschuk, David C., 4,367,882, Cl. 280-276.000.
Doherty, James B.: *See*—
Shen, Tsung-Ying; Durette, Philippe L.; Dorn, Conrad P., Jr.; Doherty, James B.; and Dean, Richard T., 4,368,190, Cl. 424-88.000.
Donahue, John W., to Mead Corporation, The. Jet drop copier. 4,368,475, Cl. 346-75.000.

Donley, Robert P.; and Dawson, Terry. Flasher controller for vehicle lights. 4,368,349, Cl. 174-52.0PE.

Donner, Meinrad: *See—*
Spath, Hans; and Donner, Meinrad, 4,368,522, Cl. 364-550.000.

Dorn, Conrad P., Jr.: *See—*
Shen, Tsung-Ying; Durette, Philippe L.; Dorn, Conrad P., Jr.; Doherty, James B.; and Dean, Richard T., 4,368,190, Cl. 424-88.000.

Dorner, Henrik: *See—*
Stefan, Mihaly; Hegedus, Zoltan; Bagi nee Schmidt, Terezia; Dorner, Henrik; Kanyo, Miklos; and Fuzesi, Pal, 4,368,221, Cl. 427-305.000.

Dorr, Karl-Heinz; Grimm, Hugo; Sander, Ulrich; Peichl, Robert; and Maier, Franz, to Metallgesellschaft Aktiengesellschaft; and Sudchemie Aktiengesellschaft. Process of producing concentrated sulfuric acid. 4,368,183, Cl. 423-522.000.

Dosimeter Corporation of America: *See—*
Gandhi, Om P., 4,368,472, Cl. 343-718.000.

Dotti, Giulio: *See—*
Moretti, Luciano; and Dotti, Giulio, 4,367,765, Cl. 137-881.000.

Doucelance, Claude: *See—*
Bachet, Bernard; and Doucelance, Claude, 4,368,422, Cl. 324-64.000.

Dover Corporation: *See—*
Gingrich, John A., 4,368,501, Cl. 361-152.000.

Dow Chemical Company, The: *See—*
Caldwell, Donald L.; and Hazelrigg, Mark J., Jr., 4,368,110, Cl. 204-290.00F.
Cameron, Donald C.; Stufflebeam, Donnie L.; and Ekey, John W., 4,367,651, Cl. 73-706.000.
Hay, Robert A., II, 4,368,093, Cl. 156-443.000.
Ishibe, Nobuyuki; and Harden nee Ashley, Jimmie K., 4,368,338, Cl. 570-109.000.
Park, Chung P., 4,368,276, Cl. 521-79.000.

Downs, Gordon W., to BP Chemicals Limited. Polymerization process and products therefrom. 4,368,302, Cl. 526-105.000.

Dowty Hydraulic Units Limited: *See—*
Toogood, Graham J., 4,368,013, Cl. 418-74.000.

Draeger, Walter A. Multiple tube cleaning apparatus. 4,367,790, Cl. 165-95.000.

Dragerwerk Aktiengesellschaft: *See—*
Benthin, Frank, 4,367,734, Cl. 128-204.130.
Pasternack, Adalbert; and Hinz, Claus-Dieter, 4,367,822, Cl. 220-265.000.

Drees, Herman M., to Pinson Energy Corporation. Water turbine. 4,368,392, Cl. 290-54.000.

Dresser Industries, Inc.: *See—*
Krueck, John F.; Braden, Donald G.; and Askins, William J., 4,367,673, Cl. 91-437.000.
Sholes, John T., II, 4,368,521, Cl. 364-506.000.

Drong, Frank, Jr.: *See—*
Ecklund, Lawrence M.; and Drong, Frank, Jr., 4,368,356, Cl. 179-1.0GS.

Drucker, Jacob; and Shea, Frank, to Carter-Wallace, Inc. Method for the application of antiperspirant powder compositions. 4,368,184, Cl. 424-66.000.

Drummond, Donald J. Mailbox. 4,367,844, Cl. 232-17.000.

Du Pont Canada Inc.: *See—*
Oughton, Richard W., 4,368,152, Cl. 260-123.500.

Dubinsky, Emanuel. Umbrella cover and method of making. 4,367,762, Cl. 135-33.00C.

Dubuc, Emile; Bourgeois, Maurice; May, Stanley; and Zoeller, Robert. Looper. 4,367,831, Cl. 226-14.000.

Dudley, Betty J., deceased (by Dudley, Kenneth H., executrix); and Williams, Joel L., to Becton, Dickinson & Company. Nonthrombogenic articles and method of preparation. 4,367,749, Cl. 128-637.000.

Dudley, Kenneth H., executrix: *See—*
Dudley, Betty J., deceased; and Williams, Joel L., 4,367,749, Cl. 128-637.000.

Dulondel, Jacques; and de la Messuziere, Philippe R. Torque limiter means for controlling rotary motion. 4,367,863, Cl. 254-391.000.

Du Pont de Nemours, E. I., and Company: *See—*
Budzinski, John C.; and Levitt, George, 4,368,067, Cl. 71-92.000.
Chen, Chi-wan; and Schwing, Gregory W., 4,368,069, Cl. 71-93.000.
Luckenbaugh, Raymond W., 4,368,068, Cl. 71-93.000.
Scott, Paul T., 4,368,274, Cl. 521-48.000.
Vasta, Joseph A., 4,368,289, Cl. 524-598.000.
Vasta, Joseph A., 4,368,309, Cl. 526-258.000.

Durette, Philippe L.: *See—*
Shen, Tsung-Ying; Durette, Philippe L.; Dorn, Conrad P., Jr.; Doherty, James B.; and Dean, Richard T., 4,368,190, Cl. 424-88.000.

Dwire, Jerold D., to International Business Machines Corporation. Display refresh memory with variable line start addressing. 4,368,466, Cl. 340-799.000.

Dye, James I., administrator: *See—*
James, Jasper L., deceased, 4,368,416, Cl. 322-2.00R.

DynaWave Corporation: *See—*
Hance, Richard D.; and Barsotti, Edward J., 4,368,410, Cl. 318-116.000.

Eastman, Alan D., to Phillips Petroleum Company. Oxidative dehydrogenation of paraffins with a promoted cobalt catalyst. 4,368,346, Cl. 585-658.000.

Eastman Kodak Company: *See—*
Anderson, Richard B.; and Kalenda, Norman W., 4,368,154, Cl. 260-156.000.
Anderson, Richard B.; and Kalenda, Norman W., 4,368,249, Cl. 430-17.000.
Fletcher, George L., Jr.; Bender, Steven L.; and Wadsworth, Donald H., 4,368,247, Cl. 430-17.000.
Gabrielsen, Rolf S.; Graham, Patricia A.; and Klijanowicz, James E., 4,368,246, Cl. 430-9.000.
Kalenda, Norman W., 4,368,153, Cl. 260-156.000.
Kalenda, Norman W., 4,368,248, Cl. 430-17.000.
Kolb, Frederick J., Jr., 4,367,930, Cl. 352-27.000.
Varner, Jerry R., 4,367,946, Cl. 355-71.000.

Eaton, Charles C., Jr.: *See—*
Cross, Henry D., III; Eaton, Charles C., Jr.; Larsen, John; and McGregor, Rob R., 4,367,600, Cl. 36-127.000.

Eaton Corporation: *See—*
Buente, Stephen M., 4,367,701, Cl. 123-90.550.
Cranston, Dean H., 4,367,964, Cl. 400-605.000.

Ebauches, S.A.: *See—*
Wiget, Fridolin, 4,367,959, Cl. 368-240.000.

Eberhardt, Alfred F.: *See—*
Bloy, Graham P., 4,368,435, Cl. 330-133.000.

Eberle, William J.: *See—*
Channing, Harry M.; Nees, John M.; and Eberle, William J., 4,367,582, Cl. 29-623.100.

Eckert, Gerold: *See—*
Bauer, Karl-Heinz; Eckert, Gerold; and Wolf, Reinhold, 4,368,441, Cl. 334-15.000.

Eckhardt, Claude; and Holzle, Gerd, to Ciba-Geigy Corporation. Fabric conditioning compositions containing phthalocyanine substituted with quaternary ammonium group-containing sulphonamide photoactivator. 4,368,053, Cl. 8-102.000.

Ecklund, Lawrence M.; and Drong, Frank, Jr., to Motorola Inc. Pilot tone detector utilizing phase deviation signals. 4,368,356, Cl. 179-1.0GS.

Ecolaire, Incorporated: *See—*
Forster, Leslie L.; and Hay, Edward F., deceased, 4,367,792, Cl. 165-113.000.

Edl, Wolfgang: *See—*
Binder, Klaus; Edl, Wolfgang; and Twittenhoff, Hansjoachim, 4,368,311, Cl. 526-317.000.

Egert, Karl-Heinz; Wank, Joachim; and Reese, Eckart, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung; and Bayer Aktiengesellschaft-Bayerwerk. Laminated plastic, its production and its use. 4,368,231, Cl. 428-220.000.

Ehmke, Richard J.; and Linsenmeyer, Arthur, to Dempster Industries, Inc. Spreader. 4,367,848, Cl. 239-665.000.

Eichelberger, Leo; and Endres, Georg, to Techno-Chemie Kessler & Co. GmbH. Vacuum cleaner hose with an electrical conductor. 4,368,348, Cl. 174-47.000.

Eichhorn, Friedrich: *See—*
Dilthey, Ulrich; Eichhorn, Friedrich; Hirsch, Peter; Holbach, Peter; and Leitner, Kurt, 4,368,371, Cl. 219-73.000.

Eikelmann, Reinhard. Apparatus for conveying rubble. 4,367,809, Cl. 182-48.000.

Ekey, John W.: *See—*
Cameron, Donald C.; Stufflebeam, Donnie L.; and Ekey, John W., 4,367,651, Cl. 73-706.000.

Ekshtut, Leonid. Combination tool. 4,367,664, Cl. 81-436.000.

Eldeen, Gene H. Newel post assembly. 4,367,864, Cl. 256-59.000.

Eldridge, Jerome M.; Lee, Michael H.; and Schwartz, Geraldine C., to International Business Machines Corporation. Passivation of RIE patterned al-based alloy films by etching to remove contaminants and surface oxide followed by oxidation. 4,368,220, Cl. 427-255.400.

Electronic Specialists, Inc.: *See—*
Stifter, Francis J., 4,368,499, Cl. 361-90.000.

Electrostatic Equipment Corp.: *See—*
Gillette, Donald J., 4,368,214, Cl. 156-51.000.

Eli Lilly and Company: *See—*
Flom, Merlyn G.; Herrold, Anne M.; Martin, Joe O.; Mentlik, Anton A.; and Warrick, Patricia P., 4,368,187, Cl. 424-81.000.
Martin, Joe O., 4,368,188, Cl. 424-81.000.
Mentlik, Anton A., 4,368,189, Cl. 424-81.000.
Spitzer, Wayne A.; Kukolja, Stjepan; Goodson, Theodore, Jr.; and Lammert, Steven R., 4,368,156, Cl. 260-239.00A.

Elliott, William A.; and Taylor, Thomas J., to Western Electric Company, Inc. Methods for the termination and connectorization of multi-conductor flat cable. 4,367,585, Cl. 29-857.000.

Ellis, R. James: *See—*
Bernard, Vincent R.; Ellis, R. James; and Rasovich, Ivan, 4,367,630, Cl. 62-63.000.

Elms, Robert T.: *See—*
Conroy, Ernest F., Jr.; and Elms, Robert T., 4,368,500, Cl. 361-94.000.

Elser, Dieter, to Zahnradfabrik Friedrichshafen, AG. Auxiliary power steering, especially for motor vehicles. 4,367,672, Cl. 91-375.00A.

Ely, Walter K. Fluid driven turbine. 4,368,007, Cl. 416-238.000.

Emax, Incorporated: *See—*
Kennedy, Stanley P., 4,368,519, Cl. 364-483.000.

Emerson Electric Co.: *See—*
Jacobs, David F., 4,368,378, Cl. 219-451.000.
Terpstra, Daniel A.; and Brundage, Richard B., 4,367,665, Cl. 83-100.000.

EMI Limited: *See*—
Forse, David P. S.; Franks, Richard W.; Bamford, Nigel T.; Coates, Philip V.; and Thorscov, Jan C., 4,368,456, Cl. 340-146.30Q.
Emkay Manufacturing Co. Inc.: *See*—
Kaplan, Alan, 4,367,579, Cl. 29-559.000.
Endo, Takeshi; Mizutani, Kiyokazu; and Ogasawara, Takahisa, to Toagoesi Chemical Industry Co., Ltd. Curable composition comprising spiro-orthoester compound. 4,368,314, Cl. 528-89.000.
Endres, Georg: *See*—
Eichelberger, Leo; and Endres, Georg, 4,368,348, Cl. 174-47.000.
Enenshtein, Gennady A.: *See*—
Dobrokhtova, Marina K.; Evseev, Bladimir A.; Artsis, Evgeny S.; Enenshtein, Gennady A.; Cheburashko, Boris P.; Platoshkina, Maria G.; Nefedov, Vladimir P.; and Valyshkina, Ljudmila I., 4,368,318, Cl. 528-326.000.
Energiagazdalkodasi Intezet: *See*—
Szucs, Laszlo; Horvath, Andras; Sigmond, Emod; Szabo, Imre; and Toth, Verona, 4,367,595, Cl. 34-27.000.
Energy & Minerals Research Co.: *See*—
Tarpley, William B., Jr., 4,367,799, Cl. 169-46.000.
Engel, John F., to FMC Corporation. 4-Heterocyclic-substituted-2-indanyl alcohols and insecticidal ester derivatives. 4,368,205, Cl. 424-274.000.
Environmental Research Institute of Michigan: *See*—
Maes, Reed E., Jr., 4,367,726, Cl. 126-422.000.
Equipment Development Company, Inc.: *See*—
Harding, Edward M., 4,367,880, Cl. 280-47.13R.
Eremeev, Arnold F.: *See*—
Rubinshtein, Georgy M.; Yatsenko, Sergei P.; Diev, Valery N.; Zlokazova, Tatyana M.; Fomin, Eduard S.; Moskov, Ruslan N.; Grigorieva, Anastasia D.; Davydov, Ivan V.; Starkov, Evgeny N.; Ovsyannikov, Vladimir I.; Eremeev, Arnold F.; and Lavrenchuk, Vladimir N., 4,368,108, Cl. 204-43.00R.
Erl, Michael: *See*—
Mayer, Johann; Maier, Johann; Mosburger, Hans; and Erl, Michael, 4,368,094, Cl. 156-462.000.
Erwin, John R.: *See*—
Staub, Anthony F.; Staub, Norman T.; and Erwin, John R., 4,367,874, Cl. 273-73.00R.
Esaki, Kunio: *See*—
Torii, Michihiro; Hirukawa, Kohei; Tsuchiya, Ryoji; Urata, Hiroshi; Sasaki, Isamu; and Esaki, Kunio, 4,368,402, Cl. 310-367.000.
Esnoult, Marc: *See*—
Bourdon, Jean-Marc; Hugues, Jean-Claude; and Esnoult, Marc, 4,368,038, Cl. 432-253.000.
Esterbauer, Josef: *See*—
Deubzer, Bernward; Esterbauer, Josef; Solbrig, Christian; and Frey, Volker, 4,368,294, Cl. 525-100.000.
Etablissement Public de Diffusion dit "Telediffusion de France": *See*—
Degoulet, Gabriel; Gaucher, Gilbert; and Gauthier, Christian, 4,368,486, Cl. 358-146.000.
Eurosil GmbH: *See*—
Azzam, Nadim, 4,368,464, Cl. 340-756.000.
Evanoski, Constant J., III. Combination catheter cystometer system and gastric feeding device. 4,367,740, Cl. 604-43.000.
Evans, John W., to EVC Associates Limited Partnership. Boiling liquid engine cooling system. 4,367,699, Cl. 123-41.230.
Evans, Robert M. Multiplexing arrangement for a plurality of voltage controlled filters. 4,368,541, Cl. 455-186.000.
EVC Associates Limited Partnership: *See*—
Evans, John W., 4,367,699, Cl. 123-41.230.
Evseev, Bladimir A.: *See*—
Dobrokhtova, Marina K.; Evseev, Bladimir A.; Artsis, Evgeny S.; Enenshtein, Gennady A.; Cheburashko, Boris P.; Platoshkina, Maria G.; Nefedov, Vladimir P.; and Valyshkina, Ljudmila I., 4,368,318, Cl. 528-326.000.
Ewig, John F., to Parker Manufacturing Company. Hacksaw with improved blade tensioning mechanism. 4,367,779, Cl. 145-33.00A.
Exacto Inc.: *See*—
Klomp, Alfred W., 4,368,049, Cl. 464-50.000.
Exley, John T.; Kuintzle, Charles, Jr.; and Tate, David L., to Avco Corporation. Rotary compressors. 4,368,005, Cl. 415-207.000.
Exxon Production Research Co.: *See*—
Bednar, John M.; and Petersen, Clifford W., 4,367,794, Cl. 166-65.00R.
Exxon Research and Engineering Co.: *See*—
Chianelli, Russell R.; Pecoraro, Theresa A.; and Dines, Martin B., 4,368,115, Cl. 208-215.000.
Hou, Ching-Tsang; Patel, Ramesh N.; and Laskin, Allen I., 4,368,267, Cl. 435-123.000.
Rosenweig, Ronald E., 4,368,131, Cl. 252-62.550.
Seiver, Robert L., 4,368,132, Cl. 252-62.550.
Thompson, John A.; Shaw, David H.; and Gudelis, David A., 4,368,112, Cl. 208-31.000.
Winter, William E.; Tunison, Mafer E.; and Staubs, David W., 4,368,113, Cl. 208-89.000.
Fabian, Wolfgang; Heinen, Horst; and Sevenich, Theodor, to Hoesch Werke Aktiengesellschaft. Loop lifter. 4,367,832, Cl. 226-108.000.
Fabrig, Paul, to Womako Maschinenkonstruktionen GmbH. Apparatus for stacking note books or the like. 4,367,815, Cl. 198-374.000.
Fairchild Camera and Instrument Corp.: *See*—
Kuo, James R., 4,368,420, Cl. 323-303.000.
Farel, Charles A.: *See*—
Arter, Nelson K.; Dodt, William C.; and Farel, Charles A., 4,367,947, Cl. 355-75.000.
Farnhill, William M.: *See*—
Parker, Alan; Dickinson, Peter J.; Clough, Douglas O.; and Farnhill, William M., 4,367,623, Cl. 57-263.000.
Fedorov, Vladimir S.: *See*—
Vannikov, Anatoly V.; Glotov, Vadim G.; Grishina, Antonina D.; Ivanova, Valentina N.; Fedorov, Vladimir S.; Chernov, Gennady M.; and Kazarinov, Vladimir E., 4,368,254, Cl. 430-333.000.
Fehr, Alex: *See*—
Fink, Willy; and Fehr, Alex, 4,367,807, Cl. 181-230.000.
Fehrmann, Heinrich: *See*—
Budel, Eduard J.; Fehrmann, Heinrich; and de Kok, Johan, 4,368,026, Cl. 425-466.000.
Feldman, Louis. Reinforced interlocking building block. 4,367,615, Cl. 52-583.000.
Feldmann, Rainer: *See*—
Mumcu, Salih; and Feldmann, Rainer, 4,368,090, Cl. 156-283.000.
Fellows, Benjamin T.: *See*—
Tung, Chi F.; and Fellows, Benjamin T., 4,367,919, Cl. 350-105.000.
Felstead, John T.; and Gerrard, John C. Device for use in making a dental replica, and a method of making a dental replica. 4,368,042, Cl. 433-213.000.
Ferguson, Richard: *See*—
Johnson, Harold R.; McKnight, Harold F.; and Ferguson, Richard, 4,367,631, Cl. 62-79.000.
Ferguson, William M.; Howard, Gene R.; and French, Charles F. Combination bee pollen trap and hive containment apparatus. 4,367,563, Cl. 6-4.00R.
Ferris, Donald L.; and Rybicki, Robert C., to United States of America, Navy. Droop stop for fully articulated rotor. 4,368,006, Cl. 416-140.000.
Feuerherd, Karl-Heinz: *See*—
Rentzea, Costin; Feuerherd, Karl-Heinz; Zeeh, Bernd; and Jung, Johann, 4,368,066, Cl. 71-76.000.
Findeisen, Kurt: *See*—
Rasshofer, Werner; Grogler, Gerhard; and Findeisen, Kurt, 4,368,278, Cl. 521-115.000.
Fink, Willy; and Fehr, Alex, to Fink, Willy. Sound absorber for compressed-air operated apparatuses, in particular compressed air vibrators. 4,367,807, Cl. 181-230.000.
Fischer, Fritz: *See*—
Habenicht, Gerd; and Fischer, Fritz, 4,368,372, Cl. 219-84.000.
Fischer, Hermann, to M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft. Offset printing machine differential speed inking system. 4,367,678, Cl. 101-350.000.
Fischer, Winfried: *See*—
Alberts, Heinrich; Fischer, Winfried; and Leuschke, Christian, 4,368,292, Cl. 525-54.230.
Fisher, Paul C.: *See*—
Williams, Raymond S.; and Fisher, Paul C., 4,367,966, Cl. 401-190.000.
Fitzgerald, John B.; and York, George L., to ACF Industries, Inc. By-pass valve improvement. 4,367,764, Cl. 137-115.000.
Fitzky, Hans G.: *See*—
Hocker, Jurgen; Merten, Rudolf; and Fitzky, Hans G., 4,368,319, Cl. 528-353.000.
Fletcher, George L., Jr.; Bender, Steven L.; and Wadsworth, Donald H., to Eastman Kodak Company. Photographic materials and processes comprising oxoindolizine and oxoindolizinium compounds. 4,368,247, Cl. 430-17.000.
Fletcher, James D., to RCA Corporation. Switch actuating apparatus for video disc player. 4,368,370, Cl. 200-329.000.
Fletcher, Sidney R.: *See*—
Kruzich, Joseph K.; and Fletcher, Sidney R., 4,368,406, Cl. 315-158.000.
Floccari, Michel: *See*—
Bruel, Michel; and Floccari, Michel, 4,368,083, Cl. 148-1.500.
Flom, Merlyn G.; Herrold, Anne M.; Martin, Joe O.; Mentlik, Anton A.; and Warrick, Patricia P., to Eli Lilly and Company. Sensitive-skin care regime. 4,368,187, Cl. 424-81.000.
Flynn, Edward G.: *See*—
Otto, William L., Jr.; and Flynn, Edward G., 4,368,074, Cl. 419-51.000.
FMC Corporation: *See*—
Ames, Thomas J.; and Cuiper, Glen H., 4,367,980, Cl. 405-169.000.
Engel, John F., 4,368,205, Cl. 424-274.000.
Focke, Heinz. Variable capacity buffer storage conveyor for cigarette packaging apparatus. 4,367,618, Cl. 53-234.000.
Fohn, Kurt: *See*—
Motzkus, Gert; and Fohn, Kurt, 4,368,055, Cl. 8-662.000.
Fomin, Eduard S.: *See*—
Rubinshtein, Georgy M.; Yatsenko, Sergei P.; Diev, Valery N.; Zlokazova, Tatyana M.; Fomin, Eduard S.; Moskov, Ruslan N.; Grigorieva, Anastasia D.; Davydov, Ivan V.; Starkov, Evgeny N.; Ovsyannikov, Vladimir I.; Eremeev, Arnold F.; and Lavrenchuk, Vladimir N., 4,368,108, Cl. 204-43.00R.
Ford Aerospace & Communications Corporation: *See*—
Luh, Howard H., 4,368,473, Cl. 343-753.000.
Ford, James M., to Olin Corporation. Electrolytic cell with inter-electrode spacer means. 4,368,109, Cl. 204-253.000.
Ford, John A.: *See*—
Whittaker, Raymond A.; Lukaszewicz, Raymond; and Ford, John A., 4,367,899, Cl. 299-1.000.
Ford Motor Company: *See*—
Boyer, Wesley D., 4,367,721, Cl. 123-617.000.
Greene, Thomas L., 4,367,662, Cl. 74-863.000.

Kruzich, Joseph K.; and Fletcher, Sidney R., 4,368,406, Cl. 315-158.000.
Forkel, Hermann: *See*—
Amtmann, Heribert; Forkel, Hermann; and Gerlach, Hans-Jurgen, 4,368,537, Cl. 378-112.000.
Forsberg, John W., to Lubrizol Corporation, The. Aqueous systems containing nitrogen-containing, phosphorous-free carboxylic solubilizer/surfactant additives. 4,368,133, Cl. 252-75.000.
Forse, David P. S.; Franks, Richard W.; Bamford, Nigel T.; Coates, Philip V.; and Thorscov, Jan C., to EMI Limited. Apparatus for correlating successive images of a scene. 4,368,456, Cl. 340-146.30Q.
Forster, Leslie L.; and Hay, Edward F., deceased (by Hay, Constance, executrix), to Ecolaire, Incorporated. Surface condenser. 4,367,792, Cl. 165-113.000.
Forster, Peter; Heidotting, Werner; Janosi, Wilhelm; and Kampfmann, Georg, to AMP Incorporated. Device for simultaneous connection of a series of cables to corresponding contacts. 4,367,575, Cl. 29-33.00M.
Forsyth Dental Infirmary for Children: *See*—
Kashket, Shelby, 4,368,272, Cl. 435-293.000.
Fortini, Umberto. Frame for eyeglasses with inclinable lenses. 4,367,929, Cl. 351-119.000.
Fox, Harold K., to Bemis Company, Inc. Valved bag sealing. 4,367,620, Cl. 53-479.000.
Fracchia, Pierluigi, to A. Tonolli & C.S.p.A. Method for scrubbing the flues and for recovering the salts in a process for the production of secondary aluminum. 4,368,070, Cl. 75-0.50B.
Frame, David P.: *See*—
Frame, Scott W.; and Frame, David P., 4,367,685, Cl. 110-347.000.
Frame, Scott W.; and Frame, David P. Process and apparatus for precisely metering quantities of granular or pulverulent solids. 4,367,685, Cl. 110-347.000.
Francis, Albert C.; and Summerlin, Frederick A., to AERPAT A.G. Blind fastener and method of manufacture thereof. 4,367,994, Cl. 411-43.000.
Frank, Robert G., to PPG Industries, Inc. Method and apparatus to remove bent, tempered glass sheets from a cooling station. 4,368,065, Cl. 65-114.000.
Franks, Richard W.: *See*—
Forse, David P. S.; Franks, Richard W.; Bamford, Nigel T.; Coates, Philip V.; and Thorscov, Jan C., 4,368,456, Cl. 340-146.30Q.
Franz, Louis J. Die insert lock screws. 4,367,970, Cl. 403-323.000.
Freilich, Max; and Gulati, Ramesh C., to True Temper Corporation. Rail anchor drive machine. 4,367,682, Cl. 104-17.00A.
French, Charles F.: *See*—
Ferguson, William M.; Howard, Gene R.; and French, Charles F., 4,367,563, Cl. 6-4.00R.
Frequency Technology, Inc.: *See*—
Wroblewski, Theodore, 4,368,407, Cl. 315-291.000.
Frese, Albert; and Baxmann, Fritz, to Chemische Werke Huels, A.G. Process for the multi-stage polymerization of ethene. 4,368,291, Cl. 525-53.000.
Frey, Volker: *See*—
Deubzer, Bernward; Esterbauer, Josef; Solbrig, Christian; and Frey, Volker, 4,368,294, Cl. 525-100.000.
Frick, Klaus: *See*—
Huggett, Paul G.; and Frick, Klaus, 4,368,099, Cl. 156-628.000.
Fried. Krupp Gesellschaft mit beschrankter Haftung: *See*—
Habenicht, Gerd; and Fischer, Fritz, 4,368,372, Cl. 219-84.000.
Friedmann, Oswald: *See*—
Maucher, Paul; and Friedmann, Oswald, 4,367,703, Cl. 123-198.00F.
Maucher, Paul; and Friedmann, Oswald, 4,367,704, Cl. 123-198.00F.
Friemann, Hans: *See*—
Alberts, Heinrich; Friemann, Hans; Moretto, Hans-Heinrich; and Sattlegger, Hans, 4,368,290, Cl. 525-29.000.
Fritsch, Joseph E., to Massey-Ferguson Inc. Single axis force transducer. 4,367,656, Cl. 73-862.650.
Fritzsche, Klaus B.: *See*—
Rees, Herbert; and Fritzsche, Klaus B., 4,368,018, Cl. 425-138.000.
Frohning, Dieter; and Horn, Gerhard, to Ruhrchemie Aktiengesellschaft. Methanation catalyst. 4,368,142, Cl. 252-455.00R.
Froment, Gilbert F., to Kinetics Technology International Corporation. Hot gas sampling. 4,367,645, Cl. 73-23.100.
Frye, Robert B., to General Electric Co. Silicone resin coating compositions. 4,368,236, Cl. 428-412.000.
Fryer, Rodney I.: *See*—
Walser, Armin; and Fryer, Rodney I., 4,368,157, Cl. 260-239.0BD.
Walser, Armin; and Fryer, Rodney I., 4,368,158, Cl. 260-239.0BD.
Walser, Armin; and Fryer, Rodney I., 4,368,159, Cl. 260-239.0BD.
Fuji Electrochemical Co., Ltd.: *See*—
Torii, Michihiro; Hirukawa, Kohei; Tsuchiya, Ryoji; Urata, Hiroshi; Sasaki, Isamu; and Esaki, Kunio, 4,368,402, Cl. 310-367.000.
Fuji Jukogyo Kabushiki Kaisha: *See*—
Nakamura, Hiroyuki; Shikata, Makoto; and Ohgami, Masaaki, 4,367,708, Cl. 123-339.000.
Fuji Photo Film Co. Ltd.: *See*—
Kato, Hisatoyo; and Ishida, Masamitsu, 4,368,384, Cl. 250-484.100.
Kobayashi, Kazuhiko, 4,368,096, Cl. 156-502.000.
Ohtsuka, Shuichi, 4,367,942, Cl. 355-3.00R.
Ono, Shigetoshi; and Fujita, Shinsaku, 4,368,251, Cl. 430-223.000.
Takahashi, Kenji; and Miyahara, Junji, 4,368,390, Cl. 250-363.00R.
Uenaka, Kazushige; Kashiwagi, Shinichi; Tahara, Toshiro; Shirasu, Kazuo; Usui, Yoshio; Abe, Akira; Nakagawa, Fumio; and Masuda, Tetsuya, 4,367,941, Cl. 354-324.000.
Yamada, Yasuyuki; Kitamoto, Tatsuji; and Akashi, Goro, 4,368,237, Cl. 428-413.000.
Fuji Photo Optical Co., Ltd.: *See*—
Tanaka, Hitoshi, 4,367,730, Cl. 128-6.000.
Fujieda, Yasuhiko: *See*—
Kawahara, Masakatsu; Amano, Itaru; Nakagawa, Kazuhiko; Fujieda, Yasuhiko; Ureshino, Kashiro; and Asada, Mitsunori, 4,368,015, Cl. 425-29.000.
Fujii, Masahiko: *See*—
Mizuno, Mitsuo; Suginaka, Akinori; Fujii, Masahiko; and Akimoto, Shinichi, 4,368,185, Cl. 424-78.000.
Fujii, Teruo: *See*—
Obata, Sukiro; Murayama, Naohiro; and Fujii, Teruo, 4,368,525, Cl. 367-165.000.
Fujii, Toru, to Olympus Optical Co., Ltd. Zoom lens system. 4,367,927, Cl. 350-426.000.
Fujikawa, Kanichi: *See*—
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Shigehara, Itaru; and Miyaji, Mikio, 4,368,340, Cl. 570-207.000.
Fujikura Cable Works, Ltd.: *See*—
Maejima, Masatsugu; Saruwatari, Koichi; and Isawa, Kazuo, 4,368,107, Cl. 204-24.000.
Fujimatsu, Wataru: *See*—
Usagawa, Yasushi; Fujimatsu, Wataru; Sasaki, Osamu; and Matsuura, Katsumi, 4,368,257, Cl. 430-384.000.
Fujino, Hiroko: *See*—
Muroi, Kaname; and Fujino, Hiroko, 4,368,105, Cl. 204-1.00T.
Fujino, Masahiko; and Nishimura, Osamu, to Takeda Chemical Industries, Ltd. Method for protecting guanidino group and restoring the same. 4,368,150, Cl. 260-112.50R.
Fujioka, Futoshi: *See*—
Light, Kenneth K.; McGhie, Joseph A.; Fujioka, Futoshi; and Yoshida, Takao, 4,368,128, Cl. 252-8.900.
Fujisawa Pharmaceutical Co., Ltd.: *See*—
Ueda, Ikuo; and Kobayshi, Masakazu, 4,368,325, Cl. 544-16.000.
Fujita, Shinsaku: *See*—
Ono, Shigetoshi; and Fujita, Shinsaku, 4,368,251, Cl. 430-223.000.
Fujitsu Fanuc Limited: *See*—
Imazeki, Ryoji; Yamazaki, Etsuo; and Sasaki, Takao, 4,368,433, Cl. 328-30.000.
Imazeki, Ryoji, 4,368,511, Cl. 364-167.000.
Imazeki, Ryoji; and Inoue, Michiya, 4,368,532, Cl. 371-21.000.
Fujitsu Limited: *See*—
Hirakawa, Osamu; and Hirose, Tadatsugu, 4,368,465, Cl. 340-771.000.
Kurosawa, Keiji; Yamamoto, Kenji; Yamashita, Mitsuo; Mitsui, Hisami; Miyabara, Ayako; Miyagawa, Kiyotaka; and Imura, Takayoshi, 4,368,503, Cl. 361-414.000.
Nakamura, Kazuhisa; and Arakawa, Hideki, 4,368,524, Cl. 365-226.000.
Shibuya, Kiyoshi; and Shirai, Hitoshi, 4,368,439, Cl. 332-9.00R.
Unotoro, Tomoyuki; Tanikawa, Kunihiro; Kurahashi, Keizo; Yamaguchi, Hisashi; Ito, Yuichiro; and Miyamoto, Yoshihiro, 4,368,467, Cl. 340-799.000.
Yamaguchi, Kohmei; Kobayashi, Kazuo; and Furukawa, Takeo, 4,368,442, Cl. 335-57.000.
Fujiwhara, Mitsuto; Matsuo, Syunji; Wada, Tsuneo; Abe, Naoto; Masukawa, Toyoaki; Iijima, Akio; and Oishi, Keiji, to Konishiroku Photo Industry Co., Ltd. Process for preparing impregnated polymer latex compositions. 4,368,258, Cl. 430-493.000.
Fujiyama, Susumu; Matsumoto, Shunichi; and Yakamizawa, Yuji, to Mitsubishi Gas Chemical Company, Inc. Process for formylating xylene mixture. 4,368,336, Cl. 568-428.000.
Fukagawa, Yasuo: *See*—
Okamura, Kazuhiko; Hirata, Shoji; Okumura, Yasushi; Fukagawa, Yasuo; Shimauchi, Yasutaka; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,368,203, Cl. 424-274.000.
Fukai, Masaru: *See*—
Sato, Akira; Niiya, Masamichi; Takeuchi, Masayuki; Fukai, Masaru; and Shintani, Sotokichi, 4,368,360, Cl. 179-170.200.
Fukuda, Kunio: *See*—
Yamashita, Izumi; and Fukuda, Kunio, 4,368,293, Cl. 525-68.000.
Fukushima, Kazumasa: *See*—
Ando, Hirokazu; Ohmori, Yasuo; Fukushima, Kazumasa; Iwama, Mitsuo; and Takahashi, Tsunematsu, 4,368,353, Cl. 178-30.000.
Fukuyama, Yoshiya: *See*—
Watanabe, Katsuyoshi; Andoh, Makoto; Saito, Yasuhisa; Maeda, Yasuteru; and Fukuyama, Yoshiya, 4,368,299, Cl. 525-481.000.
Fuller, Harrison W.: *See*—
Dale, John C.; Rines, Glen A.; and Fuller, Harrison W., 4,368,430, Cl. 324-244.000.
Funahashi, Akira: *See*—
Tsubouchi, Kaoru; and Funahashi, Akira, 4,367,824, Cl. 220-326.000.
Furihata, Makoto; Oguino, Masanori; and Sakata, Noboru, to Hitachi, Ltd. Discriminator apparatus for detecting the presence of a signal by using a differential beat signal having an inaudible frequency. 4,368,354, Cl. 179-1.0GB.
Furukawa, Hisao: *See*—
Kato, Yasushi; Furukawa, Hisao; and Ando, Naotami, 4,368,297, Cl. 525-342.000.
Furukawa, Takeo: *See*—
Yamaguchi, Kohmei; Kobayashi, Kazuo; and Furukawa, Takeo, 4,368,442, Cl. 335-57.000.
Fursuyama, Tohru, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor memory circuit. 4,368,529, Cl. 365-205.000.

Fuzeau, Michel: *See—*
de Sivry, Bruno; Sudreau, Bernard; Carsac, Claude; Hamon, Jean-Pierre; and Fuzeau, Michel, 4,368,374, Cl. 219-121.0EN.
Fuzesi, Pal: *See—*
Stefan, Mihaly; Hegedus, Zoltan; Bagi nee Schmidt, Terezia; Dorner, Henrik; Kanyo, Miklos; and Fuzesi, Pal, 4,368,221, Cl. 427-305.000.
G.D Societa per Azioni: *See—*
Seragnoli, Enzo, 4,367,758, Cl. 131-84.00B.
G. Siempelkamp GmbH & Co.: *See—*
Moitzfeld, Winfried, 4,368,014, Cl. 425-28.00B.
Gaboardi, Angelo, to Honeywell Information Systems Inc. Mosaic printing head. 4,367,962, Cl. 400-124.000.
Gabor, Laszlo: *See—*
Boor nee Mezei, Anna; Toth, Jozsef; Szen, Tamas; Gabor, Laszlo; Major nee Fastner, Piroska; and Holly, Sandor, 4,368,160, Cl. 260-397.400.
Gabrielsen, Rolf S.; Graham, Patricia A.; and Klijanowicz, James E., to Eastman Kodak Company. Photographic materials and processes comprising color-forming sulfonamidodiphenylamine dye precursors and corresponding phenazine dyes. 4,368,246, Cl. 430-9.000.
Gaiser, Paul G.: *See—*
Porter, Stephen T., II; and Gaiser, Paul G., 4,367,604, Cl. 40-564.000.
Gal, Dezso: *See—*
Kovacs, Laszlo; Moger nee Eremineva, Galina; Gal, Dezso; Hajdu, Peter; Lukacs, Julia; Kroo, Erik; Nemes, Istvan; Nemeth, Andras; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Riederauer, Szilard; and Szepvolgyi, Janos, 4,368,333, Cl. 562-407.000.
Gandhi, Om P., to Dosimeter Corporation of America. Microwave dosimeter. 4,368,472, Cl. 343-718.000.
Gantenbrink, Rudolf. Light for submersible pressure vessel with cooling means. 4,368,508, Cl. 362-267.000.
Ganz, Alfred; Hartwig, Karl; Jung, Christoph; Schnall, Gunther; Schlick, Erich; and Vossnacke, Jurgen, to Baldwin Piano & Organ Company. Developing device for copier. 4,367,954, Cl. 366-156.000.
Gardco Manufacturing, Inc.: *See—*
Rapp, William J., 4,368,506, Cl. 362-147.000.
Gardner, Mark J.: *See—*
Shefter, Eli; Smith, Francis X.; and Gardner, Mark J., 4,368,197, Cl. 424-245.000.
Gaucher, Gilbert: *See—*
Degoulet, Gabriel; Gaucher, Gilbert; and Gauthier, Christian, 4,368,486, Cl. 358-146.000.
Gauthier, Christian: *See—*
Degoulet, Gabriel; Gaucher, Gilbert; and Gauthier, Christian, 4,368,486, Cl. 358-146.000.
Gauthier, Georges. Joint prosthesis. 4,367,562, Cl. 3-1.910.
Geiger, Erich: *See—*
Sivanesan, Appukuddy; Geiger, Erich; and Rilly, Gerard, 4,368,409, Cl. 315-411.000.
Genaro, Donald M.; and McGarvey, John N., to Bell Telephone Laboratories, Incorporated. Wall telephone stand. 4,368,359, Cl. 179-146.00R.
General Battery Corporation: *See—*
Channing, Harry M.; Nees, John M.; and Eberle, William J., 4,367,582, Cl. 29-623.100.
General Electric Company: *See—*
Anthony, Thomas R., 4,368,106, Cl. 204-15.000.
Arnold, Richard B.; and Schlaudroff, Leo M., 4,367,774, Cl. 140-1.000.
Ching, Ta-Yen, 4,368,241, Cl. 428-447.000.
Danzig, Ivan F., 4,368,244, Cl. 429-217.000.
Frye, Robert B., 4,368,236, Cl. 428-412.000.
Gray, David A., 4,367,638, Cl. 62-324.600.
Hayes, Susan E., 4,368,313, Cl. 528-14.000.
Modic, Frank J.; and Boudreau, Bruce E., 4,368,279, Cl. 521-122.000.
Sikdar, Subhas K., 4,368,315, Cl. 528-198.000.
Vaughn, Howard A., Jr., 4,368,235, Cl. 428-412.000.
General Foods Inc.: *See—*
Pyves, Richard R.; and Jeffery, James W., 4,368,100, Cl. 159-48.100.
General Mills, Inc.: *See—*
Blake, Jon R.; Knutson, Richard K.; and Strommer, Deon L., 4,368,211, Cl. 426-564.000.
General Signal Corporation: *See—*
Sibley, Henry C., 4,368,534, Cl. 371-53.000.
General Tire & Rubber Company, The: *See—*
Bogdany, John, 4,368,282, Cl. 524-58.000.
Georges, Michael P. Automatic microscope slide. 4,367,915, Cl. 350-530.000.
Gerlach, Hans-Jurgen: *See—*
Amtmann, Heribert; Forkel, Hermann; and Gerlach, Hans-Jurgen, 4,368,537, Cl. 378-112.000.
Gerrard, John C.: *See—*
Felstead, John T.; and Gerrard, John C., 4,368,042, Cl. 433-213.000.
Gewerkschaft Eisenhutte Westfalia: *See—*
Trumper, Thomas, 4,367,900, Cl. 299-1.000.
Ghyczy, Jeno: *See—*
Szoke, Sandor; Lugosi, Gyorgy; Bakonyi, Maria; Ghyczy, Jeno; and Csermely, Gyorgy, 4,368,328, Cl. 548-306.000.
Giben Impianti S.p.A.: *See—*
Benuzzi, Gino, 4,367,999, Cl. 414-51.000.
Gibson, Ronald F.; and Haynes, Hendrick W., to Gibson, Ronald F. Putter. 4,367,877, Cl. 273-164.000.
Gilb, Tyrell T.; and Commins, Alfred D., to Simpson Manufacturing Co., Inc. Structural strap tie. 4,367,973, Cl. 403-405.000.
Gill, Gregg: *See—*
Kramer, Fred; and Gill, Gregg, 4,367,644, Cl. 72-389.000.
Gillespie, Amos L., Jr.: *See—*
Allen, J. Hunter, Sr.; Gillespie, Amos L., Jr.; and Johnson, George D., 4,367,646, Cl. 73-37.900.
Gillette, Donald J., to Electrostatic Equipment Corp. Method and apparatus for producing electrical conductors. 4,368,214, Cl. 156-51.000.
Gingrich, John A., to Dover Corporation. Control of electro-magnetic solenoid. 4,368,501, Cl. 361-152.000.
Gladkov, Evgeny P.: *See—*
Vasiliev, Jury N.; and Gladkov, Evgeny P., 4,368,121, Cl. 210-170.000.
Glander, Siegfried; and Lappe, Franz, to Hoechst Aktiengesellschaft. Frequency modulated microwave in combination with a voltage detector and comparator device for measuring a varying moisture content of sheet-like samples. 4,368,421, Cl. 324-58.50A.
Glaser, Robert L., to Single Vend, Inc. Dispensing apparatus and method having abutment stop. 4,367,826, Cl. 221-213.000.
Glaxo Group Limited: *See—*
Ball, Christopher; Collins, John S.; and Hamlyn, Paul F., 4,368,263, Cl. 435-47.000.
Gleason Works, The: *See—*
Hackett, Kenneth P., 4,367,643, Cl. 72-353.000.
Global Marine, Inc.: *See—*
Bolding, Vance E., 4,367,796, Cl. 166-341.000.
Glotov, Vadim G.: *See—*
Vanaikov, Anatoly V.; Glotov, Vadim G.; Grishina, Antonina D.; Ivanova, Valentina N.; Fedorov, Vladimir S.; Chernov, Gennady M.; and Kazarinov, Vladimir E., 4,368,254, Cl. 430-333.000.
Glyadinskaya, Svetlana A.: *See—*
Kotlyarevsky, Izrail L.; Myakina, Ninel I.; Kamkha, Mikhail A.; Ikryanov, Ivan M.; and Glyadinskaya, Svetlana A., 4,368,343, Cl. 585-456.000.
Gnilitsky, Boris S.: *See—*
Koshman, Vitaly I.; Petrichenko, Vladimir F.; Gnilitsky, Boris S.; Oborotov, Vyacheslav D.; Ubiiko, Alexandr M.; and Abara, Leonid P., 4,368,443, Cl. 335-138.000.
Godfrey, Thomas B. A. Sailboat rig. 4,367,688, Cl. 114-39.000.
Goebel, Guenter R.: *See—*
Brown, Leonard; and Goebel, Guenter R., 4,368,020, Cl. 425-195.000.
Goldschmidt, Arthur M.: *See—*
Chamberlain, James W.; and Goldschmidt, Arthur M., 4,368,492, Cl. 360-70.000.
Goldstein, Michael J. Phonograph cartridge alignment. 4,368,527, Cl. 369-55.000.
Gong, Cheng-Shung, to Purdue Research Foundation. Direct fermentation of D-xylose to ethanol by a xylose-fermenting yeast mutant. 4,368,268, Cl. 435-161.000.
Goode, David J., to John Mowlem & Company Limited. Door opening and closing mechanism. 4,367,610, Cl. 49-336.000.
Goodson, Theodore, Jr.: *See—*
Spitzer, Wayne A.; Kukolja, Stjepan; Goodson, Theodore, Jr.; and Lammert, Steven R., 4,368,156, Cl. 260-239.00A.
Gordon Barlow Design: *See—*
Barlow, Gordon A.; Newcomer, John R.; Krutsch, John R.; and Bezark, Fred, 4,367,875, Cl. 273-85.00F.
Gorgati, Romolo, to Derbigum America Corporation. Bitumen, atactic polypropylene & propylene/ethylene copolymer compositions and waterproofing membranes using the same. 4,368,228, Cl. 428-110.000.
Goris, Heinrich: *See—*
Schwarting, Karl H.; Goris, Heinrich; Gunther, Roland; Holz, Joachim; and Ogorek, Kurt, 4,367,902, Cl. 299-42.000.
Gorler, Klaus: *See—*
Madaus, Rolf; Gorler, Klaus; and Molls, Werner, 4,368,195, Cl. 424-195.000.
Goto, Atsushi: *See—*
Kato, Hiroaki; Hamana, Junji; Sakai, Akeo; Kawakami, Yoshio; Goto, Atsushi; and Amano, Saichiro, 4,368,496, Cl. 360-110.000.
Goto, Taro: *See—*
Ishii, Koji; and Goto, Taro, 4,367,679, Cl. 101-410.000.
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Gragson, James T., to Phillips Petroleum Company. Process of preparing grease composition. 4,368,130, Cl. 252-33.400.
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Gabrielsen, Rolf S.; Graham, Patricia A.; and Klijanowicz, James E., 4,368,246, Cl. 430-9.000.
Graphakos, Basil J.: *See—*
Katritzky, Alan R.; Graphakos, Basil J.; Lhommet, Girard A. F.; and Reynolds, Kenneth, 4,368,329, Cl. 549-13.000.
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Gray, David A., to General Electric Company. Reversible compressor heat pump. 4,367,638, Cl. 62-324.600.

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Chance, Slim; and Gray, William T., 4,367,671, Cl. 84-306.000.
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Greene, Thomas L., to Ford Motor Company. Transmission throttle valve system for supercharged internal combustion engines. 4,367,662, Cl. 74-863.000.
Gregory, Douglas A.: *See—*
Henderson, Ross A.; and Gregory, Douglas A., 4,368,415, Cl. 322-2.00R.
Gregory, Harold D., to Gregory, Virginia M. Self-pressurizing cryogenic apparatus and method. 4,367,743, Cl. 128-303.100.
Gregory, Virginia M.: *See—*
Gregory, Harold D., 4,367,743, Cl. 128-303.100.
Griffin, Warren R., to United States of America, Air Force. Thermal measuring apparatus for elastomers. 4,367,961, Cl. 374-46.000.
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Rubinshtein, Georgy M.; Yatsenko, Sergei P.; Diev, Valery N.; Zlokazova, Tatyana M.; Fomin, Eduard S.; Moskov, Ruslan N.; Grigorieva, Anastasia D.; Davydov, Ivan V.; Starkov, Evgeny N.; Ovsyannikov, Vladimir I.; Eremeev, Arnold F.; and Lavrenchuk, Vladimir N., 4,368,108, Cl. 204-43.00R.
Grimm, Hugo: *See—*
Dorr, Karl-Heinz; Grimm, Hugo; Sander, Ulrich; Peichl, Robert; and Maier, Franz, 4,368,183, Cl. 423-522.000.
Grish, Anthony J.; and Grish, Thomas A. Annular flow plastic extrusion nozzle or gate. 4,368,028, Cl. 425-569.000.
Grish, Thomas A.: *See—*
Grish, Anthony J.; and Grish, Thomas A., 4,368,028, Cl. 425-569.000.
Grishina, Antonina D.: *See—*
Vannikov, Anatoly V.; Glotov, Vadim G.; Grishina, Antonina D.; Ivanova, Valentina N.; Fedorov, Vladimir S.; Chernov, Gennady M.; and Kazarinov, Vladimir E., 4,368,254, Cl. 430-333.000.
Grob & Co. Aktiengesellschaft: *See—*
Baumann, Hans, 4,367,771, Cl. 139-358.000.
Grogler, Gerhard: *See—*
Rasshofer, Werner; Grogler, Gerhard; and Findeisen, Kurt, 4,368,278, Cl. 521-115.000.
Gross, Helmut; and Hauck, Hermann, to AB Akerlund & Rausing. Heating device for blank-shaping apparatus. 4,368,095, Cl. 156-497.000.
Gruner, Heiko: *See—*
Herden, Werner; Hochenberger, Hans-Martin; Neu, Hans; Seidel, Hans-Joachim; Pfander, Werner; Gruner, Heiko; Zabler, Erich; Pilch, Claus-Dietrich; and Linn, Karl-Otto, 4,368,453, Cl. 338-25.000.
Gudelis, David A.: *See—*
Thompson, John A.; Shaw, David H.; and Gudelis, David A., 4,368,112, Cl. 208-31.000.
Gulati, Ramesh C.: *See—*
Freilich, Max; and Gulati, Ramesh C., 4,367,682, Cl. 104-17.00A.
Gunther, Roland: *See—*
Schwarting, Karl H.; Goris, Heinrich; Gunther, Roland; Holz, Joachim; and Ogorek, Kurt, 4,367,902, Cl. 299-42.000.
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Gurak, Richard J., to International Telephone and Telegraph Corporation. Bypass apparatus for use in secure communication systems. 4,368,357, Cl. 179-1.50R.
Guterman, Daniel C., to Texas Instruments Incorporated. Process for making polysilicon resistors. 4,367,580, Cl. 29-571.000.
Guth, Kenneth C.: *See—*
Clinard, Glenn G.; Guth, Kenneth C.; Mulhollam, Gail R.; and Volk, Frank J., 4,368,460, Cl. 340-522.000.
Habenicht, Gerd; and Fischer, Fritz, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Apparatus for resistance seam welding. 4,368,372, Cl. 219-84.000.
Habereder, Peter P.: *See—*
Bayerlein, Friedrich J.; Habereder, Peter P.; Denkler, Maria; and Keramaris, Nikolaos, 4,368,324, Cl. 536-114.000.
Hackett, Kenneth P., to Gleason Works, The. Method and apparatus for cold forming metal articles having irregular cross-section. 4,367,643, Cl. 72-353.000.
Haden Schweitzer Corporation: *See—*
Bradshaw, Norman F., 4,367,787, Cl. 165-35.000.
Haepp, Hans-Josef: *See—*
Hafner, Gunther; and Haepp, Hans-Josef, 4,367,786, Cl. 165-10.000.
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Hajdu, Peter: *See—*
Kovacs, Laszlo; Moger nee Eremineva, Galina; Gal, Dezso; Hajdu, Peter; Lukacs, Julia; Kroo, Erik; Nemes, Istvan; Nemeth, Andras; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Riederauer, Szilard; and Szepvolgyi, Janos, 4,368,333, Cl. 562-407.000.
Hall, Iris H.: *See—*
Spielvogel, Bernard F.; McPhail, Andrew T.; and Hall, Iris H., 4,368,194, Cl. 424-185.000.
Hall, John H.: *See—*
Latimer, John P.; and Hall, John H., 4,367,601, Cl. 37-57.000.
Halliburton Company: *See—*
Streich, Steven G., 4,367,983, Cl. 405-227.000.
Halliburton Services: *See—*
Murphey, Joseph R., 4,368,136, Cl. 252-316.000.
Hamada, Kozo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Webbing supporting structure. 4,367,886, Cl. 280-802.000.
Hamana, Junji: *See—*
Kato, Hiroaki; Hamana, Junji; Sakai, Akeo; Kawakami, Yoshio; Goto, Atsushi; and Amano, Saichiro, 4,368,496, Cl. 360-110.000.
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Hamann, Dennis R. Cat management chamber. 4,367,696, Cl. 119-96.000.
Hamano, Eizaburo: *See—*
Takenaka, Shigeo; Hamano, Eizaburo; and Koshigoe, Shinpei, 4,368,405, Cl. 315-16.000.
Hamlyn, Paul F.: *See—*
Ball, Christopher; Collins, John S.; and Hamlyn, Paul F., 4,368,263, Cl. 435-47.000.
Hammer, Harry B.: *See—*
Sherk, Fred T.; and Hammer, Harry B., 4,368,321, Cl. 528-388.000.
Hammon, Fritz, to BASF Aktiengesellschaft. Process and apparatus for the surface analysis of flexible materials. 4,367,951, Cl. 356-357.000.
Hamon, Jean-Pierre: *See—*
de Sivry, Bruno; Sudreau, Bernard; Carsac, Claude; Hamon, Jean-Pierre; and Fuzeau, Michel, 4,368,374, Cl. 219-121.0EN.
Hanaoka, Tadashi: *See—*
Kawahara, Hisashi; Hanaoka, Tadashi; and Yamauchi, Masamichi, 4,367,958, Cl. 368-188.000.
Hanari, Tohru: *See—*
Sato, Akihiro; Uwai, Toshihiro; Hanari, Tohru; Kikuta, Kazutsune; and Miyajima, Masazumi, 4,368,304, Cl. 526-114.000.
Hance, Richard D.; and Barsotti, Edward J., to DynaWave Corporation. Ultrasound therapy device. 4,368,410, Cl. 318-116.000.
Haney, Jerry D.: *See—*
Link, William T.; Haney, Jerry D.; and Jansen, William, 4,367,751, Cl. 128-682.000.
Hanna, Marie R.: *See—*
Licciardello, Michael; Boden, Richard M.; Watkins, Hugh; and Hanna, Marie R., 4,368,145, Cl. 252-522.00R.
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Hara, Elmer H.: *See—*
Kanbe, Hiroshi; and Hara, Elmer H., 4,368,385, Cl. 250-551.000.
Hara, Michio: *See—*
Tsukada, Toshiro; Tsuruoka, Hisashi; and Hara, Michio, 4,368,457, Cl. 340-347.0AD.
Hara, Takeshi: *See—*
Masuho, Yasuhiko; and Hara, Takeshi, 4,368,149, Cl. 260-112.00B.
Harbers, H. C., Jr., to Load Cells Inc. Key mechanism. 4,368,364, Cl. 200-6.00R.
Harden nee Ashley, Jimmie K.: *See—*
Ishibe, Nobuyuki; and Harden nee Ashley, Jimmie K., 4,368,338, Cl. 570-109.000.
Harding, Edward M., to Equipment Development Company, Inc. Transport device for wheelless power driven equipment. 4,367,880, Cl. 280-47.13R.
Harigae, Shunji; Yoshida, Tomio; Nakata, Yoshinobu; Nagashima, Michiyoshi; and Sato, Toshio, to Matsushita Electric Industrial Company, Limited. Servo control system for optical system which focuses a converging light beam on a recording disc. 4,368,526, Cl. 369-45.000.
Harmon, Samuel R., to Bee Line Company. Cam locking pin. 4,367,569, Cl. 24-211.00P.
Harris Corporation: *See—*
Taylor, David L., 4,368,395, Cl. 307-455.000.
Harris, Gilbert L.: *See—*
Stiff, Alonzo B.; and Harris, Gilbert L., 4,367,802, Cl. 180-131.000.
Hart, William H., to Hart, William Howard. Standoff munition. 4,367,680, Cl. 102-387.000.
Hart, William Howard: *See—*
Hart, William H., 4,367,680, Cl. 102-387.000.
Hartwig, Karl: *See—*
Ganz, Alfred; Hartwig, Karl; Jung, Christoph; Schnall, Gunther; Schlick, Erich; and Vossnacke, Jurgen, 4,367,954, Cl. 366-156.000.
Hartwimmer, Robert: *See—*
Kuhls, Jurgen; and Hartwimmer, Robert, 4,368,296, Cl. 525-276.000.
Harvey Hubbell Incorporated: *See—*
Neuhouser, Donald E., 4,368,498, Cl. 361-48.000.
Hase, Teizo: *See—*
Suzuki, Hiroshige; and Hase, Teizo, 4,368,181, Cl. 423-345.000.
Hasegawa, Akira, to Bell Telephone Laboratories, Incorporated. Multimode fiber lightwave communication system utilizing pulse self-confinement. 4,368,543, Cl. 455-612.000.
Hasegawa, Michio: *See—*
Inomata, Koichiro; and Hasegawa, Michio, 4,368,447, Cl. 336-20.000.
Hasegawa, Shumpei: *See—*
Otsuka, Kazuo; Narasaka, Shin; and Hasegawa, Shumpei, 4,367,713, Cl. 123-440.000.

Hashima, Akiyoshi: *See*—
Baba, Masaharu; Honda, Kiyokazu; and Hashima, Akiyoshi, 4,367,573, Cl. 29-25.130.
Hashimoto, Akira: *See*—
Somezawa, Masashi; Ninomiya, Yoshinobu; and Hashimoto, Akira, 4,368,238, Cl. 428-413.000.
Hashimoto, Osamu: *See*—
Irie, Toshio; Sato, Susumu; and Hashimoto, Osamu, 4,368,084, Cl. 148-12.00C.
Hata, Kunio; Oshima, Kihachiro; Kano, Isao; Matsukura, Norio; Umeda, Hiroaki; Matsui, Motoi; Ashida, Tetsushi; Nishiguchi, Yoichi; and Yasui, Nobushige, to Jujo Paper Co., Ltd. Method for removing residual hydrogen peroxide on a sterilized food package. 4,368,081, Cl. 134-2.000.
Hatano, Itaru: *See*—
Tawada, Yoshihisa; Ushioda, Minoru; Yamamoto, Tetsuro; and Hatano, Itaru, 4,368,284, Cl. 524-230.000.
Hauck, Hermann: *See*—
Gross, Helmut; and Hauck, Hermann, 4,368,095, Cl. 156-497.000.
Hawley, Gil R.; and McDaniel, Max P., to Phillips Petroleum Company. Solubilized chromium salt in polymerization catalyst. 4,368,301, Cl. 526-100.000.
Hay, Constance, executrix: *See*—
Forster, Leslie L.; and Hay, Edward F., deceased, 4,367,792, Cl. 165-113.000.
Hay, Edward F., deceased: *See*—
Forster, Leslie L.; and Hay, Edward F., deceased, 4,367,792, Cl. 165-113.000.
Hay, Robert A., II, to Dow Chemical Company, The. Heating elements for thermoplastic lamination. 4,368,093, Cl. 156-443.000.
Hayakawa, Masatoshi; Ogi, Koei; and Takahara, Michio, to CKD Corporation. Fluorescent tube holder. 4,367,574, Cl. 29-25.190.
Hayakawa, Yoichi: *See*—
Moroto, Shuzo; Matsumoto, Goichi; and Hayakawa, Yoichi, 4,367,661, Cl. 74-665.0GE.
Hayashi, Kunihisa; and Moriyama, Masakazu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Digital indication type speedometer. 4,368,426, Cl. 324-161.000.
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Hayes, Susan E., to General Electric Company. Stabilization of silanol hydrolysates of organosilanes. 4,368,313, Cl. 528-14.000.
Haynes, Hendrick W.: *See*—
Gibson, Ronald F.; and Haynes, Hendrick W., 4,367,877, Cl. 273-164.000.
Haynes, J. David: *See*—
Mapes, Glenn H.; Kwiatkowski, Jerome A.; and Haynes, J. David, 4,368,062, Cl. 65-29.000.
Hazelett Strip-Casting Corporation: *See*—
Wood, John F. B.; Platek, Stanley W.; O'Kane, Joseph C.; and Ackel, Gary P., 4,367,783, Cl. 164-452.000.
Hazelrigg, Mark J., Jr.: *See*—
Caldwell, Donald L.; and Hazelrigg, Mark J., Jr., 4,368,110, Cl. 204-290.00F.
Heck, Gerard: *See*—
Mestrallet, Joelle; Heck, Gerard; and Kaiser, Victor, 4,368,061, Cl. 62-28.000.
Heckman, Erwin, to National Starch and Chemical Corporation. Process for producing bland-tasting starch. 4,368,212, Cl. 426-579.000.
Hedman, Dean L. R. Weedless, changeable plastic lure. 4,367,607, Cl. 43-42.100.
Heeres, Jan; and Backx, Leo J. J., to Janssen Pharmaceutica N.V. Heterocyclic derivatives of (4-phenyl-piperazine-1-yl-aryloxymethyl-1,3-dioxolan-2-yl)-methyl-1H-imidazoles and 1H-1,2,4-triazoles. 4,368,200, Cl. 424-250.000.
Hegedus, Zoltan: *See*—
Stefan, Mihaly; Hegedus, Zoltan; Bagi nee Schmidt, Terezia; Dorner, Henrik; Kanyo, Miklos; and Fuzesi, Pal, 4,368,221, Cl. 427-305.000.
Heidotting, Werner: *See*—
Forster, Peter; Heidotting, Werner; Janosi, Wilhelm; and Kampfmann, Georg, 4,367,575, Cl. 29-33.00M.
Heimovics, John F., Jr.; and Seabase, Peter P., to B. F. Goodrich Company, The. Aspirator. 4,368,009, Cl. 417-191.000.
Heine, Jacob. Fuel preheating device. 4,367,718, Cl. 123-557.000.
Heinemann, Joseph B.: *See*—
Persaud, Ian K.; and Heinemann, Joseph B., 4,368,514, Cl. 364-200.000.
Heinen, Horst: *See*—
Fabian, Wolfgang; Heinen, Horst; and Sevenich, Theodor, 4,367,832, Cl. 226-108.000.
Heinzl, Joachim; Kattner, Erich; and Rosenstock, Guenter, to Siemens Aktiengesellschaft. Arrangement for a printing head in ink mosaic printing devices. 4,368,477, Cl. 346-140.00R.
Heitzman, Steven C. Apparatus for forming sheet metal duct work. 4,367,640, Cl. 72-11.000.
Held, Paul: *See*—
Grafe, Werner; and Held, Paul, 4,367,991, Cl. 408-224.000.
Hellouin de Menibus, Olivier, to A M S S.A. Hydraulic process and apparatus for the recovery of electrical energy for use in motor test stations. 4,368,391, Cl. 290-4.00D.
Henderson, Ross A.; and Gregory, Douglas A., to British Aerospace. Converting solar power to electric power. 4,368,415, Cl. 322-2.00R.
Hepworth, Edward C.: *See*—
Kyu, Shikuo; and Hepworth, Edward C., 4,368,512, Cl. 364-200.000.
Heraeus Quarzschmelze GmbH: *See*—
Schulke, Karl A., 4,367,768, Cl. 137-527.600.
Herbert, Thomas A. Process for cutting strippable film. 4,367,588, Cl. 33-1.00M.
Hercules Incorporated: *See*—
Holt, William G., 4,367,821, Cl. 220-72.000.
Herden, Werner; Hochenberger, Hans-Martin; Neu, Hans; Seidel, Hans-Joachim; Pfander, Werner; Gruner, Heiko; Zabler, Erich; Pilch, Claus-Dietrich; and Linn, Karl-Otto, to Robert Bosch GmbH. Rapid acting gas temperature sensor. 4,368,453, Cl. 338-25.000.
Herrold, Anne M.: *See*—
Flom, Merlyn G.; Herrold, Anne M.; Martin, Joe O.; Mentlik, Anton A.; and Warrick, Patricia P., 4,368,187, Cl. 424-81.000.
Herschtal, Ladwik, to L. M. Ericsson Pty. Ltd. Loop sharing in digital systems. 4,368,358, Cl. 179-17.00B.
Hertel, Hasso, to Hoechst Aktiengesellschaft. Compositions of nitroanilines for producing azo dyes on fibers. 4,368,054, Cl. 8-527.000.
Heymer, Gero: *See*—
Shimmel, Gunther; Heymer, Gero; and Scoti, Hasso, 4,368,179, Cl. 423-315.000.
Higgs, Robert H.: *See*—
Oven, Terence; and Higgs, Robert H., 4,367,898, Cl. 299-1.000.
Hilgner, Reinhard; Utz, Wolfgang; and Schroder, Heinrich, to Siemens Aktiengesellschaft. Fixture for mounting vibration sensor near limited access machine parts. 4,367,650, Cl. 73-649.000.
Hillinger, Bruno; and Bechmann, Georg, to Waagner-Biro Aktiengesellschaft. Thermal treatment apparatus for bulk material. 4,367,598, Cl. 34-164.000.
Hintikka, Vaino V. H., to Outokumpu Oy. Process for the selective froth-flotation of sulfidic, oxidic and salt-type minerals. 4,368,117, Cl. 209-167.000.
Hinton, Jonathan W.; Powell, Frederick J.; and Matz, Robert W., to Champion Spark Plug Company. Method for the production of a ceramic insulator. 4,368,166, Cl. 264-61.000.
Hinz, Claus-Dieter: *See*—
Pasternack, Adalbert; and Hinz, Claus-Dieter, 4,367,822, Cl. 220-265.000.
Hinz, Gerhard; and Dinessen, Joseph, to CPC International Inc. Apparatus for the continuous preparation of starch milk. 4,367,953, Cl. 366-132.000.
Hirabayashi, Hisaaki; and Sugimoto, Koichi, to Hitachi, Ltd. Fitting device. 4,367,591, Cl. 33-169.00C.
Hirakawa, Osamu; and Hirose, Tadatsugu, to Fujitsu Limited. Method of actuating a plasma display panel. 4,368,465, Cl. 340-771.000.
Hirata, Mituto: *See*—
Asakura, Hiroshi; Kusaka, Masaharu; Hirata, Mituto; and Machihara, Akio, 4,368,088, Cl. 156-143.000.
Hirata, Shoji: *See*—
Okamura, Kazuhiko; Hirata, Shoji; Okumura, Yasushi; Fukagawa, Yasuo; Shimauchi, Yasutaka; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,368,203, Cl. 424-274.000.
Hirose, Tadatsugu: *See*—
Hirakawa, Osamu; and Hirose, Tadatsugu, 4,368,465, Cl. 340-771.000.
Hirsch, Peter: *See*—
Dilthey, Ulrich; Eichhorn, Friedrich; Hirsch, Peter; Holbach, Peter; and Lettner, Kurt, 4,368,371, Cl. 219-73.000.
Hirukawa, Kohei: *See*—
Torii, Michihiro; Hirukawa, Kohei; Tsuchiya, Ryoji; Urata, Hiroshi; Sasaki, Isamu; and Esaki, Kunio, 4,368,402, Cl. 310-367.000.
Hisagen, Yoshiaki: *See*—
Nakajima, Kaoru; Kobayashi, Kunio; and Hisagen, Yoshiaki, 4,368,239, Cl. 428-421.000.
Hitachi, Ltd.: *See*—
Furihata, Makoto; Oguino, Masanori; and Sakata, Noboru, 4,368,354, Cl. 179-1.0GB.
Hirabayashi, Hisaaki; and Sugimoto, Koichi, 4,367,591, Cl. 33-169.00C.
Kobayashi, Shigeo; Kobayashi, Kazuo; and Takahashi, Eiki, 4,368,448, Cl. 336-61.000.
Komatsu, Shigeru; Nagai, Kunihiko; Koyama, Takuo; Tachiuchi, Tsuguji; Kobayashi, Mikiaki; and Kurita, Toshiyuki, 4,368,461, Cl. 340-703.000.
Maruyama, Hiromi; Izumi, Masayuki; Uchikawa, Sadao; and Takeda, Renzo, 4,368,171, Cl. 376-217.000.
Oguma, Masaomi; and Ishida, Masao, 4,368,170, Cl. 376-216.000.
Sugiura, Noboru, 4,367,712, Cl. 123-427.000.
Tsukada, Toshiro; Tsuruoka, Hisashi; and Hara, Michio, 4,368,457, Cl. 340-347.0AD.
Yoneda, Kenji; Sakata, Kazuhiro; Yuminaka, Takeo; Nakazato, Masao; Kurihara, Tomiaki; Kuzunuki, Soshiro; and Katayama, Yasunori, 4,367,811, Cl. 187-29.00R.
Hitomi, Kiyoshi: *See*—
Nakanishi, Teruyuki; and Hitomi, Kiyoshi, 4,367,642, Cl. 72-234.000.
Hochenberger, Hans-Martin: *See*—
Herden, Werner; Hochenberger, Hans-Martin; Neu, Hans; Seidel, Hans-Joachim; Pfander, Werner; Gruner, Heiko; Zabler, Erich; Pilch, Claus-Dietrich; and Linn, Karl-Otto, 4,368,453, Cl. 338-25.000.

Hocker, Jurgen; Merten, Rudolf; and Fitzky, Hans G., to Bayer Aktiengesellschaft. Electrically conductive cyclic polyimides. 4,368,319, Cl. 528-353.000.

Hodes, Gary: *See—*
Manassen, Joost; Cahen, David; and Hodes, Gary, 4,368,216, Cl. 427-74.000.

Hodson, Ivan E. Nail driver. 4,367,836, Cl. 227-142.000.

Hoechst Aktiengesellschaft: *See—*
Braun, Albert; Portz, Willi; Strauss, Georg; and Delhey, Hans-Martin, 4,368,071, Cl. 75-0.50R.
Glander, Siegfried; and Lappe, Franz, 4,368,421, Cl. 324-58.50A.
Hertel, Hasso, 4,368,054, Cl. 8-527.000.
Hunger, Klaus; and Pesenacker, Manfred, 4,368,155, Cl. 260-157.000.
Kuhls, Jurgen; and Hartwimmer, Robert, 4,368,296, Cl. 525-276.000.
Shimmel, Gunther; Heymer, Gero; and Scott, Hasso, 4,368,179, Cl. 423-315.000.

Hoesch Werke Aktiengesellschaft: *See—*
Fabian, Wolfgang; Heinen, Horst; and Sevenich, Theodor, 4,367,832, Cl. 226-108.000.

Hoffmann, Helmuth: *See—*
Leverberg, Siegfried; Hofmann, Manfred; and Hoffmann, Helmuth, 4,367,888, Cl. 285-28.000.

Hoffmann-La Roche Inc.: *See—*
Liu, Chao-Min; Prosser, Barbara; and Westley, John, 4,368,265, Cl. 435-75.000.
Walser, Armin; and Fryer, Rodney I., 4,368,157, Cl. 260-239.0BD.
Walser, Armin; and Fryer, Rodney I., 4,368,158, Cl. 260-239.0BD.
Walser, Armin; and Fryer, Rodney I., 4,368,159, Cl. 260-239.0BD.

Hofmann, Manfred: *See—*
Leverberg, Siegfried; Hofmann, Manfred; and Hoffmann, Helmuth, 4,367,888, Cl. 285-28.000.

Hoganas AB: *See—*
Blom, Ingvar G. A.; and Vuokivi, Reima J., 4,367,868, Cl. 266-225.000.

Hohki, Tetsuo, to Dainippon Screen Seizo Kabushiki Kaisha. Light beam intensity stabilizing method. 4,367,926, Cl. 350-358.000.

Holbach, Peter: *See—*
Dilthey, Ulrich; Eichhorn, Friedrich; Hirsch, Peter; Holbach, Peter; and Lettner, Kurt, 4,368,371, Cl. 219-73.000.

Holker, Richard J.: *See—*
Bray, Geddes A.; and Holker, Richard J., 4,367,861, Cl. 251-61.000.

Hollandsche Beton Groep N.V.: *See—*
Arentsen, Dirk, 4,367,800, Cl. 173-127.000.

Hollenbach, Edward J.; and Howard, Norman B., to Procter & Gamble Company, The. Emulsion concentrate for palatable polyester beverage. 4,368,213, Cl. 426-590.000.

Holley, John D. Sweeper bristle and method of making. 4,367,564, Cl. 15-179.000.

Holly, Sandor: *See—*
Boor nee Mezei, Anna; Toth, Jozsef; Szen, Tamas; Gabor, Laszlo; Major nee Fastner, Piroska; and Holly, Sandor, 4,368,160, Cl. 260-397.400.

Holt, Neil L., to Burke Company, The. Lift system for tilt-up walls. 4,367,892, Cl. 294-89.000.

Holt, William G., to Hercules Incorporated. Paint pail with depending skirt for label attachment. 4,367,821, Cl. 220-72.000.

Holz, Joachim: *See—*
Schwarting, Karl H.; Goris, Heinrich; Gunther, Roland; Holz, Joachim; and Ogorek, Kurt, 4,367,902, Cl. 299-42.000.

Holzle, Gerd: *See—*
Eckhardt, Claude; and Holzle, Gerd, 4,368,053, Cl. 8-102.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Matsuyama, Youji, 4,368,417, Cl. 322-29.000.
Otsuka, Kazuo; Narasaka, Shin; and Hasegawa, Shumpei, 4,367,713, Cl. 123-440.000.

Honda, Kiyokazu: *See—*
Baba, Masaharu; Honda, Kiyokazu; and Hashima, Akiyoshi, 4,367,573, Cl. 29-25.130.

Honda, Makoto: *See—*
Yanagihara, Yuzo; Noguchi, Kohji; and Honda, Makoto, 4,368,275, Cl. 521-52.000.

Honeywell Information Systems Inc.: *See—*
Gaboardi, Angelo, 4,367,962, Cl. 400-124.000.

Hoogendijk, Christiaan J.: *See—*
Ymker, Lucas; and Hoogendijk, Christiaan J., 4,367,654, Cl. 73-861.290.

Horie, Shinji: *See—*
Yui, Hiroshi; Kakizaki, Tetsuji; Nishiya, Yashinori; and Horie, Shinji, 4,368,280, Cl. 523-211.000.

Horn, Gerhard: *See—*
Frohning, Dieter; and Horn, Gerhard, 4,368,142, Cl. 252-455.00R.

Horodysky, Andrew G.; and Kaminski, Joan M., to Mobil Oil Corporation. Multifunctional lubricant additives and compositions thereof. 4,368,129, Cl. 252-32.70E.

Horton Company, The: *See—*
Lamon, David M., 4,367,859, Cl. 248-318.000.

Horvath, Andras: *See—*
Szucs, Laszlo; Horvath, Andras; 'Sigmond, Emod; Szabo, Imre; and Toth, Verona, 4,367,595, Cl. 34-27.000.

Hot-Shot Products Co.: *See—*
Bros, Daniel M.; Bartel, William G.; and Larsen, LaVerne M., 4,367,843, Cl. 231-2.00E.

Hotspur International Corporation, Inc.: *See—*
Pace, James L., 4,367,700, Cl. 123-64.000.

Hou, Ching-Tsang; Patel, Ramesh N.; and Laskin, Allen I., to Exxon Research and Engineering Co. Epoxidation of lower α-olefins. 4,368,267, Cl. 435-123.000.

Houba, Roger: *See—*
Lorge, Michel; and Houba, Roger, 4,368,027, Cl. 425-527.000.

Howard, Gene R.: *See—*
Ferguson, William M.; Howard, Gene R.; and French, Charles F., 4,367,563, Cl. 6-4.00R.

Howard, Norman B.: *See—*
Hollenbach, Edward J.; and Howard, Norman B., 4,368,213, Cl. 426-590.000.

Howard, Paulette A.; Lehnhardt, William F.; and Orthoefer, Frank T., to A. E. Staley Manufacturing Company. 7S And 11S vegetable protein fractionation and isolation. 4,368,151, Cl. 260-123.500.

Howell, Stephen L.; and Dietrich, Ralph N., to Kimball International, Inc. Envelope generator employing dual charge pump. 4,367,670, Cl. 84-1.260.

Hoyle Marine Limited: *See—*
Milligan, Donald L., 4,367,979, Cl. 405-70.000.

Huang, Fu-chih, to USV Pharmaceutical Corporation. Tetrahydronaphthoxazoles. 4,368,201, Cl. 424-272.000.

Hubbard, Bonny J., administrator: *See—*
Hubbard, Jack L., deceased, 4,367,982, Cl. 405-202.000.

Hubbard, Jack L., deceased (by Hubbard, Bonny J., administrator), to Mobil Oil Corporation. Safety device for anchored marine structure. 4,367,982, Cl. 405-202.000.

Huggett, Paul G.; and Frick, Klaus, to RCA Corporation. Development of germanium selenide photoresist. 4,368,099, Cl. 156-628.000.

Hughes Aircraft Company: *See—*
Graube, Andrejs, 4,367,911, Cl. 350-3.610.
Seliger, Robert L., 4,368,215, Cl. 427-38.000.

Hugues, Jean-Claude: *See—*
Bourdon, Jean-Marc; Hugues, Jean-Claude; and Esnoult, Marc, 4,368,038, Cl. 432-253.000.

Huignard, Jean-Pierre; Le Berre, Serge; Mayeux, Christian; and Micheron, Francois, to Thomson-CSF. Liquid-crystal image converter device. 4,368,386, Cl. 250-213.00R.

Humphrey, James A. Reciprocating electric motor with permanent magnets. 4,368,396, Cl. 310-27.000.

Hunger, Klaus; and Pesenacker, Manfred, to Hoechst Aktiengesellschaft. Monoazo compounds derived from meta-amino-benzoic acid anilides and acetoacetylamino-benzimidazolone. 4,368,155, Cl. 260-157.000.

Hurd, Claude C., to Bear Medical Systems, Inc. Servo-controlled gas pressure relief valve. 4,367,767, Cl. 137-489.000.

Husky Injection Molding Systems Inc.: *See—*
Rees, Herbert; and Fritzsche, Klaus B., 4,368,018, Cl. 425-138.000.

Hussain, Zahera J.: *See—*
Aronson, Michael P.; Larrauri, Edilia A.; and Hussain, Zahera J., 4,368,146, Cl. 252-542.000.

Hussey Manufacturing Company: *See—*
Sutter, David L., 4,367,612, Cl. 52-9.000.

Hwang, Eddie Y.; Szabo, Andras I.; and Ottobre, Louis G., to Westinghouse Electric Corp. Steam turbine generator control system. 4,368,520, Cl. 364-494.000.

Ibrahim, Fayez F.; Subera, Elmer J.; and Myers, James E., to Tyler Refrigeration Corporation. Flexible door operating mechanism for refrigerated merchandizer display cabinet. 4,367,632, Cl. 62-82.000.

Ichikawa, Toshihito, to Pioneer Electronic Corporation. AM Stereophonic signal receiver with electric field strength detection. 4,368,355, Cl. 179-1.0GS.

Ichiyanagi, Toshikazu, to Canon Kabushiki Kaisha. Switching control system. 4,367,936, Cl. 354-173.000.

Igarashi, Yuichi: *See—*
Komatsu, Takashi; Seki, Tadao; and Igarashi, Yuichi, 4,368,493, Cl. 360-93.000.

Igashira, Toshihiko; Nomura, Ken; and Abe, Seiko, to Nippon Soken, Inc. Flexible ceramic PTC electric heater assembly. 4,368,380, Cl. 219-539.000.

Ii, Akira: *See—*
Miyoshi, Takeo; Nagai, Takanori; and Ii, Akira, 4,367,720, Cl. 123-571.000.

Iida, Hiroshi; Ohara, Tetuya; and Tuji, Masakatu, to Nippon Steel Corporation. Gas-liquid cooling apparatus. 4,367,597, Cl. 34-155.000.

Iijima, Akio: *See—*
Fujiwhara, Mitsuto; Matsuo, Syunji; Wada, Tsuneo; Abe, Naoto; Masukawa, Toyoaki; Iijima, Akio; and Oishi, Keiji, 4,368,258, Cl. 430-493.000.

Iijima, Zenshiro, to Adger Kogyo Co., Ltd. Ink composition. 4,368,076, Cl. 106-22.000.

Ikeda, Shigeho: *See—*
Tosaka, Osamu; Murakami, Yutaka; Ikeda, Shigeho; and Yoshii, Hiroe, 4,368,266, Cl. 435-110.000.

Ikemura, Yuichi: *See—*
Machida, Toyotaka; and Ikemura, Yuichi, 4,368,482, Cl. 358-29.000.

Ikeura, Kenji, to Nissan Motor Co., Ltd. Method and apparatus for ignition system spark timing control within warm-up period of the engine. 4,367,711, Cl. 123-417.000.

Ikryanov, Ivan M.: *See—*
Kotlyarevsky, Izrail L.; Myakina, Ninel I.; Kamkha, Mikhail A.; Ikryanov, Ivan M.; and Glyadinskaya, Svetlana A., 4,368,343, Cl. 585-456.000.

Imazeki, Ryoji; Yamazaki, Etsuo; and Sasaki, Takao, to Fujitsu Fanuc Limited. Signal converter circuit. 4,368,433, Cl. 328-30.000.

Imazeki, Ryoji, to Fujitsu Fanuc Limited. Numerical controlling method and system. 4,368,511, Cl. 364-167.000.

Imazeki, Ryoji; and Inoue, Michiya, to Fujitsu Fanuc Limited. Memory checking method. 4,368,532, Cl. 371-21.000.

Imperial Chemical Industries Limited: *See*—
Newton, Alan B.; Nield, Eric; and Singh, Vir B., 4,368,295, Cl. 525-166.000.
Nield, Eric, 4,368,288, Cl. 524-539.000.

Imura, Takayoshi: *See*—
Kurosawa, Keiji; Yamamoto, Kenji; Yamashita, Mitsuo; Mitsui, Hisami; Miyabara, Ayako; Miyagawa, Kiyotaka; and Imura, Takayoshi, 4,368,503, Cl. 361-414.000.

Inada, Masami; and Aoki, Kongou, to Aisin Seiki Kabushiki Kaisha. Actuator device. 4,367,674, Cl. 92-13.200.

Inamorato, Jack T.; and Chirash, William, to Colgate-Palmolive Company. Liquid detergent of controlled viscosity. 4,368,147, Cl. 252-545.000.

Inanaga, Takuzi: *See*—
Kamimura, Teturo; Komatsubara, Masahiro; Ando, Shizuo; and Inanaga, Takuzi, 4,368,494, Cl. 360-96.500.

Inomata, Koichiro; and Hasegawa, Michio, to Tokyo Shibaura Denki Kabushiki Kaisha. Rolled core. 4,368,447, Cl. 336-20.000.

Inoue, Goro: *See*—
Sato, Hiroshi; Ogoshi, Shohei; and Inoue, Goro, 4,368,204, Cl. 424-274.000.

Inoue, Hiroshi; Komeya, Katsutoshi; and Tsuge, Akihiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for producing powder of α-silicon nitride. 4,368,180, Cl. 423-344.000.

Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,368,412, Cl. 318-632.000.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Microprocessor-controlled motor drive control system. 4,368,412, Cl. 318-632.000.

Inoue, Michiya: *See*—
Imazeki, Ryoji; and Inoue, Michiya, 4,368,532, Cl. 371-21.000.

Inoue MTP Kabushiki Kaisha: *See*—
Mizutani, Tomihiko, 4,367,641, Cl. 72-65.000.

Inoue, Takehisa: *See*—
Tada, Kuniyuki; Minomiya, Eiichi; and Inoue, Takehisa, 4,368,339, Cl. 570-202.000.

Inoue, Yoshio: *See*—
Nakajima, Kaoru; Somezawa, Masashi; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, 4,368,242, Cl. 428-447.000.

Institute National de la Recherche Agronomique: *See*—
Staron, Thadee J., 4,368,269, Cl. 435-172.000.

Instituto Mexicano del Petroleo: *See*—
Jimenez, Humberto D.; and Mora, Emilio W., 4,368,173, Cl. 422-197.000.

International Business Machines Corporation: *See*—
Arter, Nelson K.; Dodt, William C.; and Farel, Charles A., 4,367,947, Cl. 355-75.000.
Dwire, Jerold D., 4,368,466, Cl. 340-799.000.
Eldridge, Jerome M.; Lee, Michael H.; and Schwartz, Geraldine C., 4,368,220, Cl. 427-255.400.
McCorkle, Richard A., 4,368,538, Cl. 378-122.000.
Meltzer, David, 4,368,513, Cl. 364-200.000.

International Flavors & Fragrances, Inc.: *See*—
Licciardello, Michael; Boden, Richard M.; Watkins, Hugh; and Hanna, Marie R., 4,368,145, Cl. 252-522.00R.
Light, Kenneth K.; McGhie, Joseph A.; Fujioka, Futoshi; and Yoshida, Takao, 4,368,128, Cl. 252-8.900.

International Telephone and Telegraph Corporation: *See*—
Gurak, Richard J., 4,368,357, Cl. 179-1.50R.

Intichar, Lutz: *See*—
Schnapper, Christoph; and Intichar, Lutz, 4,368,397, Cl. 310-52.000.

Ipco Corporation: *See*—
Weissman, Bernard, 4,368,040, Cl. 433-36.000.

Ipsen Industries International GmbH: *See*—
Limque, Ferdinand; and Bertrand, Hans, 4,368,037, Cl. 432-239.000.

Irby, Enek E., to Burlington Industries, Inc. Pneumatic transfer mechanism for forming yarn tail ends. 4,367,849, Cl. 242-18.0PW.

Irie, Toshio; Sato, Susumu; and Hashimoto, Osamu, to Kawasaki Steel Corporation. Method for producing cold rolled steel sheets having a noticeably excellent formability. 4,368,084, Cl. 148-12.00C.

Isawa, Kazuo: *See*—
Maejima, Masatsugu; Saruwatari, Koichi; and Isawa, Kazuo, 4,368,107, Cl. 204-24.000.

Iscar Ltd.: *See*—
Porat, Reuven; and Nessel, Elizer, 4,367,990, Cl. 407-114.000.

Ishibe, Nobuyuki; and Harden nee Ashley, Jimmie K., to Dow Chemical Company, The. Degreaser solvent stabilization. 4,368,338, Cl. 570-109.000.

Ishida, Kunio, to Tokico Ltd. Ball joint. 4,367,968, Cl. 403-122.000.

Ishida, Masamitsu: *See*—
Kato, Hisatoyo; and Ishida, Masamitsu, 4,368,384, Cl. 250-484.100.

Ishida, Masao: *See*—
Oguma, Masaomi; and Ishida, Masao, 4,368,170, Cl. 376-216.000.

Ishihara Sangyo Kaisha Ltd.: *See*—
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Shigehara, Itaru; and Miyaji, Mikio, 4,368,340, Cl. 570-207.000.

Ishii, Keizou: *See*—
Ishikura, Shinichi; Ishii, Keizou; Kanda, Kazunori; and Mizuguchi, Ryuzo, 4,368,287, Cl. 524-513.000.

Ishii, Koji; and Goto, Taro, to Ryobi, Ltd. Packing sheet overlaying device for offset printing machine. 4,367,679, Cl. 101-410.000.

Ishii, Tadashi, to Kobishi Electric Co., Ltd. Motor actuated bell. 4,368,458, Cl. 340-396.000.

Ishikawa, Masao, to Nissan Motor Company, Limited. Liquid crystal display unit for an automotive vehicle. 4,367,923, Cl. 350-345.000.

Ishikawa, Norio; Taniguchi, Nobuyuki; and Yuasa, Yoshio, to Minolta Camera Kabushiki Kaisha. Exposure control system. 4,367,932, Cl. 354-23.00D.

Ishikura, Shinichi; Ishii, Keizou; Kanda, Kazunori; and Mizuguchi, Ryuzo, to Nippon Paint Co., Ltd. Emulsifier and compositions comprising same. 4,368,287, Cl. 524-513.000.

Ishikura, Tomoyuki: *See*—
Okamura, Kazuhiko; Hirata, Shoji; Okumura, Yasushi; Fukagawa, Yasuo; Shimauchi, Yasutaka; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,368,203, Cl. 424-274.000.

Ishiyama, Shozo, to Kabushiki Kaisha Gakuhu Kenkyusha (Gakken Co., Ltd.). Numeral adding toy. 4,368,381, Cl. 235-1.00C.

Ito, Susumu: *See*—
Sawamua, Mitsuharu; and Ito, Susumu, 4,367,921, Cl. 350-164.000.

Ito, Yuichiro: *See*—
Unotoro, Tomoyuki; Tanikawa, Kunihiro; Kurahashi, Keizo; Yamaguchi, Hisashi; Ito, Yuichiro; and Miyamoto, Yoshihiro, 4,368,467, Cl. 340-799.000.

Ivanova, Valentina N.: *See*—
Vannikov, Anatoly V.; Glotov, Vadim G.; Grishina, Antonina D.; Ivanova, Valentina N.; Fedorov, Vladimir S.; Chernov, Gennady M.; and Kazarinov, Vladimir E., 4,368,254, Cl. 430-333.000.

Iwama, Mitsuo: *See*—
Ando, Hirokazu; Ohmori, Yasuo; Fukushima, Kazumasa; Iwama, Mitsuo; and Takahashi, Tsunematsu, 4,368,353, Cl. 178-30.000.

Iwamoto, Seigo; and Saito, Eiichi, to Nihonshikizai Kogyo Co., Ltd.; and Takeda Chemical Industries, Ltd. Agent for improving chroma and brightness of pigments. 4,368,161, Cl. 260-448.00R.

Iwashita, Tomonori: *See*—
Mashimo, Yukio; and Iwashita, Tomonori, 4,367,937, Cl. 354-173.000.

Izawa, Minoru; Takeda, Nobuhiro; and Nakano, Tasuku, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Tokai Rika Co. Ltd. Rotational direction sensor. 4,368,393, Cl. 307-115.000.

Izumi, Masayuki: *See*—
Maruyama, Hiromi; Izumi, Masayuki; Uchikawa, Sadao; and Takeda, Renzo, 4,368,171, Cl. 376-217.000.

J. I. Case Company: *See*—
Schlapman, William J., 4,367,603, Cl. 37-251.000.

J. M. Voith GmbH: *See*—
Bahr, Theodor; and Pfalzer, Lothar, 4,368,101, Cl. 162-4.000.

Jackson, Norman C., to Standard Products Company, The. Decorative molding with metallic appearance. 4,368,224, Cl. 428-31.000.

Jacob, Ezekiel J.: *See*—
Cooper, Sidney; and Jacob, Ezekiel J., 4,368,250, Cl. 430-109.000.

Jacobs, David F., to Emerson Electric Co. Electric heating elements. 4,368,378, Cl. 219-451.000.

Jacquet, Maurice A., to Valeo. Switching device, notably for the control of an electrical motor in an automotive vehicle. 4,368,365, Cl. 200-11.0TW.

Jagenberg Werke AG: *See*—
Bergs, Erwin, 4,367,691, Cl. 118-119.000.

James, Jasper L., deceased (by Dye, James I., administrator), to James Laboratories, Inc. Thermionic-thermoelectric generator system and apparatus. 4,368,416, Cl. 322-2.00R.

James Laboratories, Inc.: *See*—
James, Jasper L., deceased, 4,368,416, Cl. 322-2.00R.

James, Richard P., to Personal Products Company. Substantive wetting agents for absorbent materials. 4,368,323, Cl. 536-56.000.

Jamison, Thomas D., to Combustion Engineering, Inc. Method and apparatus for suppressing noise during nondestructive eddy current testing. 4,368,429, Cl. 324-225.000.

Janisiewicz, Stanley; Levie, Michael M.; and Czebiniak, Andrew J., to Universal Instruments Corporation. Method and apparatus for straightening leads and verifying the orientation and functionality of components. 4,367,584, Cl. 29-837.000.

Janome Sewing Machine Co., Ltd.: *See*—
Watanabe, Kazuo; and Makabe, Hahiro, 4,368,414, Cl. 318-696.000.

Janosi, Wilhelm: *See*—
Forster, Peter; Heidotting, Werner; Janosi, Wilhelm; and Kampfmann, Georg, 4,367,575, Cl. 29-33.00M.

Jansen, William: *See*—
Link, William T.; Haney, Jerry D.; and Jansen, William, 4,367,751, Cl. 128-682.000.

Janssen Pharmaceutica Inc.: *See*—
Legendre, Robert; and Schlosaberg, Steven, 4,367,738, Cl. 128-218.0PA.

Janssen Pharmaceutica N.V.: *See*—
Heeres, Jan; and Backx, Leo J. J., 4,368,200, Cl. 424-250.000.

Jaquith, Douglas, deceased; by Jaquith, Hope, heiress; by Jaquith, Kent, heir; and by Jaquith, William, heir, to Jaquith, Hope. Musical instrument support. 4,367,830, Cl. 224-258.000.

Jaquith, Hope: *See*—
Jaquith, Douglas, deceased; Jaquith, Hope, heiress; Jaquith, Kent, heir; and Jaquith, William, heir, 4,367,830, Cl. 224-258.000.

Jaquith, Hope, heiress: *See*—
Jaquith, Douglas, deceased; Jaquith, Hope, heiress; Jaquith, Kent, heir; and Jaquith, William, heir, 4,367,830, Cl. 224-258.000.

Jaquith, Kent, heir: *See*—
Jaquith, Douglas, deceased; Jaquith, Hope, heiress; Jaquith, Kent, heir; and Jaquith, William, heir, 4,367,830, Cl. 224-258.000.

Jaquith, William, heir: *See*—
Jaquith, Douglas, deceased; Jaquith, Hope, heiress; Jaquith, Kent, heir; and Jaquith, William, heir, 4,367,830, Cl. 224-258.000.
Jeffery, James W.: *See*—
Pyves, Richard R.; and Jeffery, James W., 4,368,100, Cl. 159-48.100.
Jensen, Joseph D. Circular saw attachment. 4,367,668, Cl. 83-415.000.
Jerr-Dan Corporation: *See*—
Kryzyosiak, Andrew, Jr., 4,368,002, Cl. 414-494.000.
Jimenez, Humberto D.; and Mora, Emilio W., to Instituto Mexicano del Petroleo. Reactor for oxichlorination of ethylene and process therefor. 4,368,173, Cl. 422-197.000.
Jimenez, Oscar; and Bianco, Frank J., to Biotechnology, Inc. Apparatus for testing physical condition of a subject. 4,367,752, Cl. 128-689.000.
Jimmy Dean Meat Company, Inc., The: *See*—
Bernard, Vincent R.; Ellis, R. James; and Rasovich, Ivan, 4,367,630, Cl. 62-63.000.
Jirak, Thomas L., to Medtronic Inc. Apparatus for monitoring and storing heartbeats of a patient. 4,367,753, Cl. 128-708.000.
John Mowlem & Company Limited: *See*—
Goode, David J., 4,367,610, Cl. 49-336.000.
Johnson, Claris E.; and Crump, Hubert C., to Butler Manufacturing Company. Method of placing stitches in a moving panel. 4,367,578, Cl. 29-429.000.
Johnson, George D.: *See*—
Allen, J. Hunter, Sr.; Gillespie, Amos L., Jr.; and Johnson, George D., 4,367,646, Cl. 73-37.900.
Johnson, Harold R.; McKnight, Harold F.; and Ferguson, Richard, to Johnson, Harold R. Air conditioning apparatus and methods using underground duct. 4,367,631, Cl. 62-79.000.
Johnson, Howard L.; and Kramer, David A. Removable gooseneck for trailers. 4,367,884, Cl. 280-423.00B.
Johnston, James J., to Akzona Incorporated. Electrical connector coupling. 4,367,908, Cl. 339-154.00A.
Jones, Richard E.: *See*—
Vickery, Brian H.; Anik, Shabbir; and Jones, Richard E., 4,368,186, Cl. 424-78.000.
Jones, Robert L.; and Wilson, Norman H., to National Research Development Corporation. Prostaglandins. 4,368,332, Cl. 560-120.000.
Jordan, Russell Eugene: *See*—
Stiff, Alonzo B.; and Harris, Gilbert L., 4,367,802, Cl. 180-131.000.
Jornod, Eugene R.; and Siden, Steven D., to Barber-Colman Company. Lead-lag load lockout control. 4,368,502, Cl. 361-192.000.
Joyner, James M.: *See*—
Barkis, Edward; Crummer, Robert R.; and Joyner, James M., 4,368,233, Cl. 428-245.000.
Jucker, Hans, to Teli-Kassenfabrik und-Tresorbau, Brack & Peter, Inh. Jucker & Co. Safe having laterally retractable swing door wings. 4,367,684, Cl. 109-70.000.
Jujo Paper Co., Ltd.: *See*—
Hata, Kunio; Oshima, Kihachiro; Kano, Isao; Matsukura, Norio; Umeda, Hiroaki; Matsui, Motoi; Ashida, Tetsushi; Nishiguchi, Yoichi; and Yasui, Nobushige, 4,368,081, Cl. 134-2.000.
Julius Blum Gesellschaft m.b.H.: *See*—
Rock, Erich; and Blum, Herbert, 4,367,566, Cl. 16-236.000.
Rock, Erich, 4,367,906, Cl. 312-330.00R.
Jung, Christoph: *See*—
Ganz, Alfred; Hartwig, Karl; Jung, Christoph; Schnall, Gunther; Schlick, Erich; and Vossnacke, Jurgen, 4,367,954, Cl. 366-156.000.
Jung, Johann: *See*—
Rentzea, Costin; Feuerherd, Karl-Heinz; Zeeh, Bernd; and Jung, Johann, 4,368,066, Cl. 71-76.000.
Kabushiki Kaisha Asano Kenkyusho: *See*—
Asano, Kazuo, 4,368,024, Cl. 425-397.000.
Kabushiki Kaisha Fujikoshi: *See*—
Araki, Kazuo; and Tochizawa, Ikuo, 4,368,446, Cl. 335-258.000.
Kabushiki Kaisha Gakushu Kenkyusha (Gakken Co., Ltd.): *See*—
Ishiyama, Shozo, 4,368,381, Cl. 235-1.00C.
Kabushiki Kaisha Kobe Seiko Sho: *See*—
Kawahara, Masakatsu; Amano, Itaru; Nakagawa, Kazuhiko; Fujieda, Yasuhiko; Ureshino, Kashiro; and Asada, Mitsunori, 4,368,015, Cl. 425-29.000.
Kabushiki Kaisha Komatsu Seisakusho: *See*—
Ogata, Yasuhiro; and Mutou, Norishige, 4,367,624, Cl. 60-484.000.
Kabushiki Kaisha Orii Jidoki Seisakusho: *See*—
Orii, Masaru, 4,368,022, Cl. 425-343.000.
Kabushiki Kaisha Suwa Seikosha: *See*—
Koto, Haruhiko, 4,368,478, Cl. 346-140.00R.
Kabushiki Kaisha Universal: *See*—
Kotoyori, Yukio, 4,367,876, Cl. 273-121.00A.
Kaeser, James A., to Colgate Palmolive Company. Method for retarding gelation of bicarbonate-carbonate-zeolite-silicate crutcher slurries. 4,368,134, Cl. 252-140.000.
Kaiser, Victor: *See*—
Mestrallet, Joelle; Heck, Gerard; and Kaiser, Victor, 4,368,061, Cl. 62-28.000.
Kajiyama, Ryuichi: *See*—
Terazono, Narihiro; and Kajiyama, Ryuichi, 4,368,518, Cl. 364-433.000.
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Yui, Hiroshi; Kakizaki, Tetsuji; Nishiya, Yashinori; and Horie, Shinji, 4,368,280, Cl. 523-211.000.
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Anderson, Richard B.; and Kalenda, Norman W., 4,368,154, Cl. 260-156.000.
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Kamijo, Ken: *See*—
Maeda, Kouzou; and Kamijo, Ken, 4,367,851, Cl. 242-107.700.
Kamimura, Teturo; Komatsubara, Masahiro; Ando, Shizuo; and Inanaga, Takuzi, to Pioneer Electronic Corporation. Player for magnetic tape cartridge recordings. 4,368,494, Cl. 360-96.500.
Kaminski, Joan M.: *See*—
Horodysky, Andrew G.; and Kaminski, Joan M., 4,368,129, Cl. 252-32.70E.
Kamiyama, Hiroki: *See*—
Tawara, Kinya; Kamiyama, Hiroki; Nakashizu, Shigenori; Kaneko, Takashi; Wakui, Tadahiro; and Matsumoto, Tadashi, 4,368,337, Cl. 568-613.000.
Kamkha, Mikhail A.: *See*—
Kotlyarevsky, Izrail L.; Myakina, Ninel I.; Kamkha, Mikhail A.; Ikryanov, Ivan M.; and Glyadinskaya, Svetlana A., 4,368,343, Cl. 585-456.000.
Kampfmann, Georg: *See*—
Forster, Peter; Heidotting, Werner; Janosi, Wilhelm; and Kampfmann, Georg, 4,367,575, Cl. 29-33.00M.
Kampwerth, August: *See*—
Roderfeld, Heinrich; and Kampwerth, August, 4,367,756, Cl. 130-23.000.
Kanai, Toshio: *See*—
Yanagiako, Hiroshi; Kanai, Toshio; Kogawa, Yoshio; Yoshida, Michihiro; Mashino, Zenji; Shimizu, Shin-ichi; Sugiya, Teruo; and Onozaki, Masaki, 4,368,060, Cl. 55-73.000.
Kanbe, Hiroshi; and Hara, Elmer H., to Nippon Telegraph & Telephone Public Corp. Optoelectronic switches. 4,368,385, Cl. 250-551.000.
Kanda, Kazunori: *See*—
Ishikura, Shinichi; Ishii, Keizou; Kanda, Kazunori; and Mizuguchi, Ryuzo, 4,368,287, Cl. 524-513.000.
Kanebo Foods, Ltd.: *See*—
Murakami, Sanpei; Kokeguchi, Sadao; Takahashi, Hiroshi; and Okada, Ken, 4,368,210, Cl. 426-557.000.
Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Kato, Yasushi; Furukawa, Hisao; and Ando, Naotami, 4,368,297, Cl. 525-342.000.
Senda, Kenichi; Nishida, Tatehiko; and Nakagawa, Masao, 4,368,218, Cl. 427-222.000.
Tawada, Yoshihisa; Ushioda, Minoru; Yamamoto, Tetsuro; and Hatano, Itaru, 4,368,284, Cl. 524-230.000.
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Sato, Kozi; and Kaneko, Tadahiro, 4,368,504, Cl. 362-33.000.
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Kano, Isao: *See*—
Hata, Kunio; Oshima, Kihachiro; Kano, Isao; Matsukura, Norio; Umeda, Hiroaki; Matsui, Motoi; Ashida, Tetsushi; Nishiguchi, Yoichi; and Yasui, Nobushige, 4,368,081, Cl. 134-2.000.
Kantor, Frederick W. Rotary thermodynamic apparatus and method. 4,367,639, Cl. 62-499.000.
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Kaplan, Alan, to Emkay Manufacturing Co. Inc. Method of connecting a crystal to a crystal holder. 4,367,579, Cl. 29-559.000.
Karl Kassbohrer Fahrzeugwerke GmbH: *See*—
Walcher, Wilhelm, 4,367,780, Cl. 160-213.000.
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Uenaka, Kazushige; Kashiwagi, Shinichi; Tahara, Toshiro; Shirasu, Kazuo; Usui, Yoshio; Abe, Akira; Nakagawa, Fumio; and Masuda, Tetsuya, 4,367,941, Cl. 354-324.000.
Kashket, Shelby, to Forsyth Dental Infirmary for Children. Device for identifying and locating dental microorganisms. 4,368,272, Cl. 435-293.000.
Katayama, Yasunori: *See*—
Yoneda, Kenji; Sakata, Kazuhiro; Yuminaka, Takeo; Nakazato, Masao; Kurihara, Tomiaki; Kuzunuki, Soshiro; and Katayama, Yasunori, 4,367,811, Cl. 187-29.00R.
Kato, Hiroaki; Hamana, Junji; Sakai, Akeo; Kawakami, Yoshio; Goto, Atsushi; and Amano, Saichiro, to Canon Kabushiki Kaisha. Magnetic head. 4,368,496, Cl. 360-110.000.
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Kato, Takaaki: *See*—
Totani, Shinzo; Kato, Takaaki; Mizuno, Yoshikazu; and Noda, Munetaka, 4,367,805, Cl. 180-179.000.
Kato, Yasushi; Furukawa, Hisao; and Ando, Naotami, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Paint containing a silyl group containing vinyl resin, and a method of manufacturing the same with ethyl silicate and curing catalyst. 4,368,297, Cl. 525-342.000.
Katritzky, Alan R.; Graphakos, Basil J.; Lhommet, Girard A. F.; and Reynolds, Kenneth, to Minnesota Mining and Manufacturing Company. Process of preparing thiopyrylium sensitizing dyes. 4,368,329, Cl. 549-13.000.
Kattner, Erich: *See*—
Heinzl, Joachim; Kattner, Erich; and Rosenstock, Guenter, 4,368,477, Cl. 346-140.00R.
Kawahara, Hisashi; Hanaoka, Tadashi; and Yamauchi, Masamichi, to Citizen Watch Company Limited. Correction signal generating system for an electronic timepiece. 4,367,958, Cl. 368-188.000.
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Kawakami, Yoshio: *See*—
Kato, Hiroaki; Hamana, Junji; Sakai, Akeo; Kawakami, Yoshio; Goto, Atsushi; and Amano, Saichiro, 4,368,496, Cl. 360-110.000.
Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Yoshida, Toshio, 4,367,838, Cl. 228-112.000.
Kawasaki Steel Corporation: *See*—
Akagi, Jiro, 4,367,846, Cl. 239-96.000.
Irie, Toshio; Sato, Susumu; and Hashimoto, Osamu, 4,368,084, Cl. 148-12.00C.
Nakanishi, Teruyuki; and Hitomi, Kiyoshi, 4,367,642, Cl. 72-234.000.
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Morioka, Masayoshi; and Kawashima, Sadao, 4,368,232, Cl. 428-228.000.
Kawate, Keiichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Liquid crystal display device having redundant pairs of address buses. 4,368,523, Cl. 365-63.000.
Kazarinov, Vladimir E.: *See*—
Vannikov, Anatoly V.; Glotov, Vadim G.; Grishina, Antonina D.; Ivanova, Valentina N.; Fedorov, Vladimir S.; Chernov, Gennady M.; and Kazarinov, Vladimir E., 4,368,254, Cl. 430-333.000.
Keifer, George E., Jr.: *See*—
Blair, Matthew J.; and Keifer, George E., Jr., 4,367,865, Cl. 266-44.000.
Keller, Gerald H.; Senese, Frank J.; and Vlasic, John G., to Atlantic Richfield Company. Antitheft mechanism for gasoline pump. 4,367,827, Cl. 222-2.000.
Kelly, Joseph D.: *See*—
Valimont, James L.; and Kelly, Joseph D., 4,368,087, Cl. 156-102.000.
Kennedy, Stanley P., to Emax, Incorporated. Energy utilization or consumption recording method. 4,368,519, Cl. 364-483.000.
Kenney, Alan G., to Ofrex Group Limited. Tacker. 4,367,833, Cl. 227-8.000.
Keramaris, Nikolaos: *See*—
Bayerlein, Friedrich J.; Habereder, Peter P.; Denkler, Maria; and Keramaris, Nikolaos, 4,368,324, Cl. 536-114.000.
Kerr, Robert L., Jr. Thermal protection of aluminum conductor junctions. 4,368,452, Cl. 337-414.000.
Kidd, H. Keith, to Kollmorgen Technologies Corporation. Control system for electric motor. 4,368,411, Cl. 318-254.000.
Kiehs, Karl; and Adolphi, Heinrich, to BASF Aktiengesellschaft. Phosphoric acid esters, and their use for combating pests. 4,368,196, Cl. 424-200.000.
Kikuchi, Makoto; and Kobayashi, Akiyoshi, to Toyoda Koki Kabushiki Kaisha. Cage slot grinding machine. 4,367,611, Cl. 51-41.000.
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Sato, Akihiro; Uwai, Toshihiro; Hanari, Tohru; Kikuta, Kazutsune; and Miyajima, Masazumi, 4,368,304, Cl. 526-114.000.
Kilmer, Lauren G. Filament vegetation trimmer. 4,367,587, Cl. 30-276.000.
Kimball International, Inc.: *See*—
Howell, Stephen L.; and Dietrich, Ralph N., 4,367,670, Cl. 84-1.260.
Kimberley, John A.: *See*—
DiDomenico, Robert A.; Cavanaugh, John B.; and Kimberley, John A., 4,367,714, Cl. 123-449.000.
Kimura, Susumu; Ario, Hiroyosi; and Midorikawa, Minoru, to Nissan Motor Co., Ltd. Cross-flow type internal combustion engine having an exhaust gas recirculation system. 4,367,719, Cl. 123-568.000.
Kinetics Technology International Corporation: *See*—
Froment, Gilbert F., 4,367,645, Cl. 73-23.100.
Kinoshita, Osamu: *See*—
Taniguchi, Yoshiharu; Akiyama, Masanori; and Kinoshita, Osamu, 4,368,400, Cl. 310-322.000.
Kishida, Kazuo; Sasaki, Isao; and Mori, Hiroshi, to Mitsubishi Rayon Co., Ltd. Reinforced resin composition. 4,368,283, Cl. 524-109.000.
Kitamoto, Tatsuji: *See*—
Yamada, Yasuyuki; Kitamoto, Tatsuji; and Akashi, Goro, 4,368,237, Cl. 428-413.000.
Kitamura, Kazuhiko; Nonoyama, Takao; and Okumura, Atsuo, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kogyo Kabushiki Kaisha. Pneumatically operated device with valve and switch mechanisms. 4,368,366, Cl. 200-83.00Q.
Kitamura, Takashi, to Canon Kabushiki Kaisha. Light deflecting apparatus. 4,367,912, Cl. 350-6.800.
Klijanowicz, James E.: *See*—
Gabrielsen, Rolf S.; Graham, Patricia A.; and Klijanowicz, James E., 4,368,246, Cl. 430-9.000.
Kline, Larry H. Flexible teeth-cleaning device. 4,367,759, Cl. 132-89.000.
Klomp, Alfred W., to Exacto Inc. Coupler assembly joining a driving shaft to a driven shaft for constant velocity transmission. 4,368,049, Cl. 464-50.000.
Klose, Sigmar; Roder, Albert; and Schneider, Walter, to Boehringer Mannheim GmbH. Method and reagent for the determination of triglycerides. 4,368,261, Cl. 435-15.000.
Klug, Jerry J., to United States of America, Interior. Combined aerosol monitor and calibrateable light ray scattering reference rod. 4,367,950, Cl. 356-338.000.
Knutson, Richard K.: *See*—
Blake, Jon R.; Knutson, Richard K.; and Strommer, Deon L., 4,368,211, Cl. 426-564.000.
Kobayashi, Akiyoshi: *See*—
Kikuchi, Makoto; and Kobayashi, Akiyoshi, 4,367,611, Cl. 51-41.000.
Kobayashi, Kazuhiko, to Fuji Photo Film Co., Ltd. Photographic film splicer. 4,368,096, Cl. 156-502.000.
Kobayashi, Kazuo: *See*—
Kobayashi, Shigeo; Kobayashi, Kazuo; and Takahashi, Eiki, 4,368,448, Cl. 336-61.000.
Yamaguchi, Kohmei; Kobayashi, Kazuo; and Furukawa, Takeo, 4,368,442, Cl. 335-57.000.
Kobayashi, Keizo: *See*—
Kobayashi, Kouzi; and Kobayashi, Keizo, 4,367,812, Cl. 192-3.300.
Kobayashi, Kouzi; and Kobayashi, Keizo, to Aisin-Warner Kabushiki Kaisha. Control apparatus for torque converter direct coupling clutch in automatic transmissions. 4,367,812, Cl. 192-3.300.
Kobayashi, Kunio: *See*—
Nakajima, Kaoru; Kobayashi, Kunio; and Hisagen, Yoshiaki, 4,368,239, Cl. 428-421.000.
Kobayashi, Mikiaki: *See*—
Komatsu, Shigeru; Nagai, Kunihiko; Koyama, Takuo; Tachiuchi, Tsuguji; Kobayashi, Mikiaki; and Kurita, Toshiyuki, 4,368,461, Cl. 340-703.000.
Kobayashi, Ryuichiro: *See*—
Komamura, Tawara; Takahashi, Jiro; and Kobayashi, Ryuichiro, 4,368,260, Cl. 430-562.000.
Kobayashi, Shigeo; Kobayashi, Kazuo; and Takahashi, Eiki, to Hitachi, Ltd. Water cooling apparatus for electric circuit elements. 4,368,448, Cl. 336-61.000.
Kobayashi, Takayuki; and Tamamura, Ryo, to Asahi Glass Company, Ltd. Process for preparing nickel layer. 4,368,223, Cl. 427-443.100.
Kobayshi, Masakazu: *See*—
Ueda, Ikuo; and Kobayshi, Masakazu, 4,368,325, Cl. 544-16.000.
Kobe Steel, Ltd.: *See*—
Asami, Takayoshi, 4,367,791, Cl. 165-109.00T.
Kobishi Electric Co., Ltd.: *See*—
Ishii, Tadashi, 4,368,458, Cl. 340-396.000.
Kobzhasov, Abubakir K.: *See*—
Abishev, Dzhantore N.; Buketov, Evnei A.; Shindauletova, Aigul T.; Baltynova, Nazymkul; Babukaya, Ida N.; Kobzhasov, Abubakir K.; Malyshev, Vitaly P.; Bauer, Ivan K.; Mukhamedinov, Murat M.; Kusainov, Temirkhan A.; Orazalina, Kasken N.; and Buketov, Eslambek A., 4,368,176, Cl. 423-25.000.
Kodama, Shun-ichi: *See*—
Yamabe, Masaaki; Kodama, Shun-ichi; and Kojima, Gen, 4,368,308, Cl. 526-247.000.
Kogawa, Yoshio: *See*—
Yanagisako, Hiroshi; Kanai, Toshio; Kogawa, Yoshio; Yoshida, Michihiro; Mashino, Zenji; Shimizu, Shin-ichi; Sugiya, Teruo; and Onozaki, Masaki, 4,368,060, Cl. 55-73.000.
Kohlbauer, Walter; and Schirk, Gunter, to Agfa-Gevaert Aktiengesellschaft. Apparatus for admitting liquid to the vessels of developing machines for photosensitive material. 4,368,010, Cl. 417-271.000.
Kohler, Kranz, to Mesaerschmitt-Bolkow-Blohm GmbH. Method of manufacturing an array of solar cells. 4,367,581, Cl. 29-572.000.
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Yamabe, Masaaki; Kodama, Shun-ichi; and Kojima, Gen, 4,368,308, Cl. 526-247.000.
Kojima, Tadashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Error data correcting system. 4,368,533, Cl. 371-37.000.
Kokeguchi, Sadao: *See*—
Murakami, Sanpei; Kokeguchi, Sadao; Takahashi, Hiroshi; and Okada, Ken, 4,368,210, Cl. 426-557.000.
Kokusai Denshin Denwa Kabushiki Kaisha: *See*—
Sato, Akira; Niiya, Masamichi; Takeuchi, Masayuki; Fukai, Masaru; and Shintani, Sotokichi, 4,368,360, Cl. 179-170.200.
Kolb, Frederick J., Jr., to Eastman Kodak Company. Sound reproduction method and apparatus. 4,367,930, Cl. 352-27.000.
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Kidd, H. Keith, 4,368,411, Cl. 318-254.000.
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Komamura, Tawara; Takahashi, Jiro; and Kobayashi, Ryuichiro, to Konishiroku Photo Industry Co., Ltd. Photographic light sensitive element. 4,368,260, Cl. 430-562.000.

Komatsu, Shigeru; Nagai, Kunihiko; Koyama, Takuo; Tachiuchi, Tsuguji; Kobayashi, Mikiaki; and Kurita, Toshiyuki, to Hitachi, Ltd. Digital data processing device. 4,368,461, Cl. 340-703.000.
Komatsu, Takashi; Seki, Tadao; and Igarashi, Yuichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Tape cassette device. 4,368,493, Cl. 360-93.000.
Komatsu, Toshiaki: *See*—
Yamada, Hirotada; Nakagome, Takenari; and Komatsu, Toshiaki, 4,368,198, Cl. 424-246.000.
Komatsubara, Masahiro: *See*—
Kamimura, Teturo; Komatsubara, Masahiro; Ando, Shizuo; and Inanaga, Takuzi, 4,368,494, Cl. 360-96.500.
Komemushi, Setsuo: *See*—
Miura, Yoshiharu; Okazaki, Mitsuo; Komemushi, Setsuo; Sakata, Tenji; Shiroza, Satoshi; and Obana, Satoshi, 4,368,271, Cl. 435-247.000.
Komeya, Katsutoshi: *See*—
Inoue, Hiroshi; Komeya, Katsutoshi; and Tsuge, Akihiko, 4,368,180, Cl. 423-344.000.
Kondo, Shiro, to Olympus Optical Co., Ltd. Reel shaft braking device of magnetic recording tape running apparatus. 4,367,856, Cl. 242-204.000.
Konishiroku Photo Industry Co., Ltd.: *See*—
Abe, Tadashi, 4,367,945, Cl. 355-51.000.
Fujiwhara, Mitsuto; Matsuo, Syunji; Wada, Tsuneo; Abe, Naoto; Masukawa, Toyoaki; Iijima, Akio; and Oishi, Keiji, 4,368,258, Cl. 430-493.000.
Komamura, Tawara; Takahashi, Jiro; and Kobayashi, Ryuichiro, 4,368,260, Cl. 430-562.000.
Kuge, Takao; and Ohta, Takeshi, 4,367,935, Cl. 354-25.000.
Kuru, Hiroshi, 4,367,944, Cl. 355-14.0CH.
Nakamura, Hiroya, 4,367,943, Cl. 355-3.00R.
Sakaguchi, Hirofumi; Matsumoto, Ken-ichi; and Masuda, Keiji, 4,367,690, Cl. 118-60.000.
Usagawa, Yasushi; Fujimatsu, Wataru; Sasaki, Osamu; and Matsuura, Katsumi, 4,368,257, Cl. 430-384.000.
Kos, Jacob J.: *See*—
Nauta, Jan P.; and Kos, Jacob J., 4,368,240, Cl. 428-447.000.
Koshi, Masaru: *See*—
Mori, Kenzo; Yasuda, Hyo; and Koshi, Masaru, 4,368,470, Cl. 343-113.00R.
Koshigoe, Shinpei: *See*—
Takenaka, Shigeo; Hamano, Eizaburo; and Koshigoe, Shinpei, 4,368,405, Cl. 315-16.000.
Koshman, Vitaly I.; Petrichenko, Vladimir F.; Gnilitsky, Boris S.; Oborotov, Vyacheslav D.; Ubiiko, Alexandr M.; and Abara, Leonid P. Power electric circuit switching device. 4,368,443, Cl. 335-138.000.
Kotlyarevsky, Izrail L.; Myakina, Ninel I.; Kamkha, Mikhail A.; Ikryanov, Ivan M.; and Glyadinskaya, Svetlana A. Process for producing high-vacuum oils. 4,368,343, Cl. 585-456.000.
Koto, Haruhiko, to Shinshu Seiki Kabushiki Kaisha; and Kabushiki Kaisha Suwa Seikosha. Ink supply system for ink jet printers. 4,368,478, Cl. 346-140.00R.
Kotoyori, Yukio, to Kabushiki Kaisha Universal. Score display apparatus for pinball game machines and display method therefor. 4,367,876, Cl. 273-121.00A.
Kotzur, Frank W., to Windings, Inc. Guide and support members for unwinding flexible material from a wound package. 4,367,853, Cl. 242-163.000.
Kouno, Kageaki: *See*—
Okamura, Kazuhiko; Hirata, Shoji; Okumura, Yasushi; Fukagawa, Yasuo; Shimauchi, Yasutaka; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,368,203, Cl. 424-274.000.
Kovacs, Laszlo; Moger nee Eremineva, Galina; Gal, Dezso; Hajdu, Peter; Lukacs, Julia; Kroo, Erik; Nemes, Istvan; Nemeth, Andras; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Riederauer, Szilard; and Szepvolgyi, Janos, to Tatabanyai Szenbanyak. Method for the chemical utilization of coal by liquid phase oxidation. 4,368,333, Cl. 562-407.000.
Koyama, Mitoshi: *See*—
Araya, Hiroyuki; Saito, Toshihiko; Kumazawa, Katsuyoshi; Sakamoto, Moriyoshi; and Koyama, Mitoshi, 4,368,032, Cl. 431-118.000.
Koyama, Takuo: *See*—
Komatsu, Shigeru; Nagai, Kunihiko; Koyama, Takuo; Tachiuchi, Tsuguji; Kobayashi, Mikiaki; and Kurita, Toshiyuki, 4,368,461, Cl. 340-703.000.
Kozam, George; and Romanelli, Pat. Multiple barrel syringe. 4,367,737, Cl. 128-215.000.
Koziolek, Werner: *See*—
Preuss, Bernhard; and Koziolek, Werner, 4,368,444, Cl. 335-166.000.
Kramer, David A.: *See*—
Johnson, Howard L.; and Kramer, David A., 4,367,884, Cl. 280-423.00B.
Kramer, Fred; and Gill, Gregg, to Pennsylvania Crusher Corporation. Adjustable die and key assembly. 4,367,644, Cl. 72-389.000.
Krapf, Rudolf: *See*—
Rohr, Franz-Josef; and Krapf, Rudolf, 4,368,431, Cl. 324-464.000.
Kreitzer, Melvyn H.; and Chen, Muh-fa, to Vivitar Corporation. Wide angle lens attachment. 4,367,928, Cl. 350-453.000.
Kremheller, Hermann, to Ludwig Riedhammer GmbH & Co. KG. Kiln for firing ceramic workpieces. 4,368,036, Cl. 432-146.000.
Kriebel, Manfred: *See*—
Doerges, Alexander; Kriebel, Manfred; and Schlauer, Johann, 4,368,059, Cl. 55-73.000.
Kroo, Erik: *See*—
Kovacs, Laszlo; Moger nee Eremineva, Galina; Gal, Dezso; Hajdu, Peter; Lukacs, Julia; Kroo, Erik; Nemes, Istvan; Nemeth, Andras; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Riederauer, Szilard; and Szepvolgyi, Janos, 4,368,333, Cl. 562-407.000.
Krueck, John F.; Braden, Donald G.; and Askins, William J., to Dresser Industries, Inc. System and method for controlling the elevation of a boom hoist device. 4,367,673, Cl. 91-437.000.
Krutsch, John R.: *See*—
Barlow, Gordon A.; Newcomer, John R.; Krutsch, John R.; and Bezark, Fred, 4,367,875, Cl. 273-85.00F.
Kruzich, Joseph K.; and Fletcher, Sidney R., to Ford Motor Company. Lamp dimmer control with integral ambient sensor. 4,368,406, Cl. 315-158.000.
Kryzyosiak, Andrew, Jr., to Jerr-Dan Corporation. Car carrier. 4,368,002, Cl. 414-494.000.
Kubota, Ltd.: *See*—
Takahashi, Makoto; and Sugitani, Junichi, 4,368,172, Cl. 420-584.000.
Kuge, Takao; and Ohta, Takeshi, to Konishiroku Photo Industry Co., Ltd. Camera equipped with an automatic focus adjusting device. 4,367,935, Cl. 354-25.000.
Kuh, Susan N. Y. Time machine/time puzzle. 4,368,045, Cl. 434-304.000.
Kuhla, Donald E.: *See*—
Brennan, Thomas M.; Brannegan, Daniel P.; Kuhla, Donald E.; and Weeks, Paul D., 4,368,331, Cl. 549-417.000.
Kuhls, Jurgen; and Hartwimmer, Robert, to Hoechst Aktiengesellschaft. Free-flowing sintering powders which have improved properties and are based on tetrafluoroethylene polymers, and a process for their manufacture. 4,368,296, Cl. 525-276.000.
Kuintzle, Charles, Jr.: *See*—
Exley, John T.; Kuintzle, Charles, Jr.; and Tate, David L., 4,368,005, Cl. 415-207.000.
Kukes, Semyon, to Phillips Petroleum Company. Olefin disproportionation and catalyst therefor. 4,368,141, Cl. 252-439.000.
Kukolja, Stjepan: *See*—
Spitzer, Wayne A.; Kukolja, Stjepan; Goodson, Theodore, Jr.; and Lammert, Steven R., 4,368,156, Cl. 260-239.00A.
Kumazawa, Katsuyoshi: *See*—
Araya, Hiroyuki; Saito, Toshihiko; Kumazawa, Katsuyoshi; Sakamoto, Moriyoshi; and Koyama, Mitoshi, 4,368,032, Cl. 431-118.000.
Kumazawa, Toshihiko: *See*—
Mitsuhata, Masashi; Watanabe, Fumio; and Kumazawa, Toshihiko, 4,368,144, Cl. 252-463.000.
Kummler, Ralph H.; Leffert, Charles B.; Ozarski, Robert G.; Piccirelli, Robert A.; and Teichmann, Theodor, to Texas Gas Transmission Corporation. Pyrochemical processes for the decomposition of water. 4,368,169, Cl. 376-148.000.
Kunz, Walter, to Ciba-Geigy Corporation. Process for the preparation of 3-(N-arylamino)-tetra-hydrothiophen-2-one derivatives. 4,368,327, Cl. 548-262.000.
Kuo, James R., to Fairchild Camera and Instrument Corp. Supply voltage sense amplifier. 4,368,420, Cl. 323-303.000.
Kurahashi, Keizo: *See*—
Unotoro, Tomoyuki; Tanikawa, Kunihiro; Kurahashi, Keizo; Yamaguchi, Hisashi; Ito, Yuichiro; and Miyamoto, Yoshihiro, 4,368,467, Cl. 340-799.000.
Kuraray Company, Limited: *See*—
Yamauchi, Junichi; Masuhara, Eiichi; Nakabayashi, Nobuo; Shibatani, Kyoichiro; and Wada, Tooru, 4,368,043, Cl. 433-217.000.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Obata, Sukiro; Murayama, Naohiro; and Fujii, Teruo, 4,368,525, Cl. 367-165.000.
Kurihara, Tomiaki: *See*—
Yoneda, Kenji; Sakata, Kazuhiro; Yuminaka, Takeo; Nakazato, Masao; Kurihara, Tomiaki; Kuzunuki, Soshiro; and Katayama, Yasunori, 4,367,811, Cl. 187-29.00R.
Kurita, Toshiyuki: *See*—
Komatsu, Shigeru; Nagai, Kunihiko; Koyama, Takuo; Tachiuchi, Tsuguji; Kobayashi, Mikiaki; and Kurita, Toshiyuki, 4,368,461, Cl. 340-703.000.
Kurosawa, Keiji; Yamamoto, Kenji; Yamashita, Mitsuo; Mitsui, Hisami; Miyabara, Ayako; Miyagawa, Kiyotaka; and Imura, Takayoshi, to Fujitsu Limited. Hollow multilayer printed wiring board. 4,368,503, Cl. 361-414.000.
Kuru, Hiroshi, to Konishiroku Photo Industry Co., Ltd. Charging potential control means for electrophotographic copiers. 4,367,944, Cl. 355-14.0CH.
Kurz, Dieter, to Wacker-Chemie GmbH. Process and catalyst for the polymerization of α-olefins. 4,368,306, Cl. 526-125.000.
Kusainov, Temirkhan A.: *See*—
Abishev, Dzhantore N.; Buketov, Evnei A.; Shindauletova, Aigul T.; Baltynova, Nazymkul; Babskaya, Ida N.; Kobzhasov, Abubakir K.; Malyshev, Vitaly P.; Bauer, Ivan K.; Mukhamedinov, Murat M.; Kusainov, Temirkhan A.; Orazalina, Kasken N.; and Buketov, Eslambek A., 4,368,176, Cl. 423-25.000.
Kusaka, Masaharu: *See*—
Asakura, Hiroshi; Kusaka, Masaharu; Hirata, Mituto; and Machihara, Akio, 4,368,088, Cl. 156-143.000.

Kusumoto, Hideto: *See*—
Hayashi, Masahiro; Yoshimura, Tamotsu; Mukai, Seiichi; Shikama, Masaharu; Kusumoto, Hideto; and Yamanouchi, Hideki, 4,368,286, Cl. 524-394.000.

Kusz, John P. Unit for carrying cargo and/or child. 4,367,829, Cl. 224-31.000.

Kuzunuki, Soshiro: *See*—
Yoneda, Kenji; Sakata, Kazuhiro; Yuminaka, Takeo; Nakazato, Masao; Kurihara, Tomiaki; Kuzunuki, Soshiro; and Katayama, Yasunori, 4,367,811, Cl. 187-29.00R.

Kwiatkowski, Jerome A.: *See*—
Mapes, Glenn H.; Kwiatkowski, Jerome A.; and Haynes, J. David, 4,368,062, Cl. 65-29.000.

Kyu, Shikun; and Hepworth, Edward C., to Motorola, Inc. Advanced data link controller having a plurality of multi-bit status registers. 4,368,512, Cl. 364-200.000.

L. M. Ericsson Pty. Ltd.: *See*—
Herschtal, Ludwik, 4,368,358, Cl. 179-17.00B.

La-Z-Boy Chair Company: *See*—
Pacitti, William; and Ruble, Harold P., 4,367,895, Cl. 297-85.000.

Labatt Brewing Company Limited: *See*—
McFadden, Richard D., 4,367,840, Cl. 229-39.00R.

Labays, Jean-Bernard: *See*—
Barnoud, Francois; and Labays, Jean-Bernard, 4,367,647, Cl. 73-84.000.

Lacour, Alain P.: *See*—
Ancher, Jean-Francois R.; Lacour, Alain P.; Moinet, Gerard H.; and Tisne-Versailles, Jacky A., 4,368,199, Cl. 424-250.000.

Lacroix, Alain, to Societe Lyonnaise des Applications Catalytiques. Heterogeneous flameless hydrocarbon combustion contact catalyst, method of making same and method for combustion of hydrocarbons. 4,368,029, Cl. 431-7.000.

Laddha, Sudhir L.; and Sulzberg, Theodore, to Sun Chemical Corporation. Process for the preparation of high-solids rosin-modified polyesters. 4,368,316, Cl. 528-295.500.

Lagerwall, Sven T.: *See*—
Clark, Noel A.; and Lagerwall, Sven T., 4,367,924, Cl. 350-334.000.

Lammert, Steven R.: *See*—
Spitzer, Wayne A.; Kukolja, Stjepan; Goodson, Theodore, Jr.; and Lammert, Steven R., 4,368,156, Cl. 260-239.00A.

Lamon, David M., to Horton Company, The. Ceiling-mounted holder for intravenous fluid receptacles. 4,367,859, Cl. 248-318.000.

Lance, Thomas N. Barrel dog house. 4,367,695, Cl. 119-19.000.

Langen, Hans: *See*—
Nittel, Fritz; Langen, Hans; and Ranz, Erwin, 4,368,259, Cl. 430-546.000.

Langen, Robert; and Beck, Rasmus. Method of removing rust from metallic objects. 4,368,080, Cl. 134-1.000.

Langston, Herbert. Athletic accessory. 4,367,872, Cl. 273-54.00B.

Lapart, Andre, to Societe Anonyme dite: Alsthom-Atlantique. Apparatus for preventing a turbine from exceeding a predetermined value of a monitored physical magnitude. 4,368,004, Cl. 415-39.000.

Lappe, Franz: *See*—
Glander, Siegfried; and Lappe, Franz, 4,368,421, Cl. 324-58.50A.

Larrauri, Edilia A.: *See*—
Aronson, Michael P.; Larrauri, Edilia A.; and Hussain, Zahera J., 4,368,146, Cl. 252-542.000.

Larsen, John: *See*—
Cross, Henry D., III; Eaton, Charles C., Jr.; Larsen, John; and McGregor, Rob R., 4,367,600, Cl. 36-127.000.

Larsen, LaVerne M.: *See*—
Bros, Daniel M.; Bartel, William G.; and Larsen, LaVerne M., 4,367,843, Cl. 231-2.00E.

Laskin, Allen I.: *See*—
Hou, Ching-Tsang; Patel, Ramesh N.; and Laskin, Allen I., 4,368,267, Cl. 435-123.000.

Lassanske, George G., to Outboard Marine Corporation. Internal combustion engine with automatic compression release. 4,367,702, Cl. 123-182.000.

Latimer, John P.; and Hall, John H., to Deepsea Ventures, Inc. Separable means for excluding oversized slender objects. 4,367,601, Cl. 37-57.000.

Laurel Bank Machine Co., Ltd.: *See*—
Miyazaki, Yorizo, 4,367,617, Cl. 53-212.000.

Lausch, Herbert: *See*—
Schnabel, Wolfram; Reuter, Gerhard; and Lausch, Herbert, 4,368,177, Cl. 423-175.000.

Lavering, Gordon R. Aiming method and means. 4,367,949, Cl. 356-144.000.

Lavigne, Ronald L.: *See*—
Martone, Leonard P.; and Lavigne, Ronald L., 4,368,120, Cl. 210-170.000.

Lavrenchuk, Vladimir N.: *See*—
Rubinshtein, Georgy M.; Yatsenko, Sergei P.; Diev, Valery N.; Zlokazova, Tatyana M.; Fomin, Eduard S.; Moskov, Ruslan N.; Grigorieva, Anastasia D.; Davydov, Ivan V.; Starkov, Evgeny N.; Ovsyannikov, Vladimir I.; Eremeev, Arnold F.; and Lavrenchuk, Vladimir N., 4,368,108, Cl. 204-43.00R.

Lazaro, Luis J., Jr., to Boeing Company, The. Powered wire spool holding and positioning apparatus. 4,367,852, Cl. 242-129.720.

Leatherman, Ivan R., to PPG Industries, Inc. Method of polymerizing sheets. 4,368,310, Cl. 526-314.000.

Le Berre, Serge: *See*—
Huignard, Jean-Pierre; Le Berre, Serge; Mayeux, Christian; and Micheron, Francois, 4,368,386, Cl. 250-213.00R.

Lee, Michael H.: *See*—
Eldridge, Jerome M.; Lee, Michael H.; and Schwartz, Geraldine C., 4,368,220, Cl. 427-255.400.

Leech, Brad G.; and Caronna, Cosimo, to Carrier Corporation. Combination control box and service cord strain relief for an air conditioning unit. 4,367,635, Cl. 62-259.100.

Leeds & Northrup Company: *See*—
Anderson, Paul, 4,368,510, Cl. 364-151.000.

Leffert, Charles B.: *See*—
Kummler, Ralph H.; Leffert, Charles B.; Ozarski, Robert G.; Piccirelli, Robert A.; and Teichmann, Theodor, 4,368,169, Cl. 376-148.000.

Legendre, Robert; and Schlossberg, Steven, to Janssen Pharmaceutica Inc. Pre-filled syringe for abusable drugs. 4,367,738, Cl. 128-218.0PA.

Lehmacher, Hans. Method of and apparatus for making handle bags bearing indicia. 4,368,051, Cl. 493-11.000.

Lehmann, William L.: *See*—
Carlson, David J.; and Lehmann, William L., 4,368,540, Cl. 455-180.000.

Lehnhardt, William F.: *See*—
Howard, Paulette A.; Lehnhardt, William F.; and Orthoefer, Frank T., 4,368,151, Cl. 260-123.500.

Lein, Joseph: *See*—
Okamura, Kazuhiko; Hirata, Shoji; Okumura, Yasushi; Fukagawa, Yasuo; Shimauchi, Yasutaka; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,368,203, Cl. 424-274.000.

Leong, Basil K. J., to Unjohn Company, The. Dust generator. 4,367,988, Cl. 406-63.000.

L'Etat Francais, represente par le Secretaire d'Etat aux Postes et Telecommunications (Centre National d'Etudes des Telecommunications): *See*—
Degoulet, Gabriel; Gaucher, Gilbert; and Gauthier, Christian, 4,368,486, Cl. 358-146.000.

Lettner, Kurt: *See*—
Dilthey, Ulrich; Eichhorn, Friedrich; Hirsch, Peter; Holbach, Peter; and Lettner, Kurt, 4,368,371, Cl. 219-73.000.

Leuschke, Christian: *See*—
Alberts, Heinrich; Fischer, Winfried; and Leuschke, Christian, 4,368,292, Cl. 525-54.230.

LeVeen, Eric G.: *See*—
LeVeen, Harry H.; LeVeen, Eric G.; and LeVeen, Robert F., 4,367,739, Cl. 128-236.000.

LeVeen, Harry H.; LeVeen, Eric G.; and LeVeen, Robert F. Syringe. 4,367,739, Cl. 128-236.000.

LeVeen, Robert F.: *See*—
LeVeen, Harry H.; LeVeen, Eric G.; and LeVeen, Robert F., 4,367,739, Cl. 128-236.000.

Lever Brothers Company: *See*—
Aronson, Michael P.; Larrauri, Edilia A.; and Hussain, Zahera J., 4,368,146, Cl. 252-542.000.

Leverberg, Siegfried; Hofmann, Manfred; and Hoffmann, Helmuth. Plug coupler for several hose connections. 4,367,888, Cl. 285-28.000.

Levie, Michael M.: *See*—
Janisiewicz, Stanley; Levie, Michael M.; and Czebiniak, Andrew J., 4,367,584, Cl. 29-837.000.

Levine, Robert A. Device for obtaining stool samples. 4,367,750, Cl. 128-638.000.

Levitt, George: *See*—
Budzinski, John C.; and Levitt, George, 4,368,067, Cl. 71-92.000.

Levy, Allan, to Siemens Corporation. Sine wave generator for different frequencies. 4,368,432, Cl. 328-14.000.

Lewis, David W., to M-O Valve Company Limited, The. Electron gun including support structure for accelerating lens. 4,368,403, Cl. 313-457.000.

Lewis, Lawrence A., to Clip Strip Corporation. Display rack. 4,367,819, Cl. 211-59.100.

Lhommet, Girard A. F.: *See*—
Katritzky, Alan R.; Graphakos, Basil J.; Lhommet, Girard A. F.; and Reynolds, Kenneth, 4,368,329, Cl. 549-13.000.

Li, Chou H. Self-optimizing machine and method. 4,368,509, Cl. 364-148.000.

Liburdy, Robert P. Apparatus for determining cell membrane dielectric breakdown. 4,368,423, Cl. 324-65.00R.

Licciardello, Michael; Boden, Richard M.; Watkins, Hugh; and Hanna, Marie R., to International Flavors & Fragrances, Inc. Perfume use for oxoalkyl esters. 4,368,145, Cl. 252-522.00R.

Light, Kenneth K.; McGhie, Joseph A.; Fujioka, Futoshi; and Yoshida, Takao, to International Flavors & Fragrances Inc. Tricyclic alcohols, ethers and esters, process for preparing same and use thereof in augmenting or enhancing the organoleptic properties of consumable materials. 4,368,128, Cl. 252-8.900.

Limque, Ferdinand; and Bertrand, Hans, to Ipsen Industries International GmbH. Conveyor arrangement for a continuous oven. 4,368,037, Cl. 432-239.000.

Lin, Nan J.: *See*—
O'Rell, Dennis D.; and Lin, Nan J., 4,368,243, Cl. 429-147.000.

Lingl Corporation: *See*—
Muller, Walter, 4,368,033, Cl. 432-6.000.

Link, William T.; Haney, Jerry D.; and Jansen, William, to Warner-Lambert Company. Apparatus and process for producing artifact effect on sphygmometric information. 4,367,751, Cl. 128-682.000.

Linn, Karl-Otto: *See*—
Herden, Werner; Hochenberger, Hans-Martin; Neu, Hans; Seidel, Hans-Joachim; Pfander, Werner; Gruner, Heiko; Zabler, Erich; Pilch, Claus-Dietrich; and Linn, Karl-Otto, 4,368,453, Cl. 338-25.000.

Linsenmeyer, Arthur: *See*—
Ehmke, Richard J.; and Linsenmeyer, Arthur, 4,367,848, Cl. 239-665.000.
Lipkins, Morton S. Pentareflectors and their manufacture. 4,367,922, Cl. 350-301.000.
Lisle, Hampton H.; and DeMartino, Kevin, to Westinghouse Electric Corp. Monopulse radio receiver compensation apparatus. 4,368,468, Cl. 343-16.00M.
Lisnow, Theodore E., to Lisnow & Weiss Co, Inc. Watch case assembly. 4,367,960, Cl. 368-309.000.
Lisnow & Weiss Co, Inc.: *See*—
Lisnow, Theodore E., 4,367,960, Cl. 368-309.000.
Litton Systems, Inc.: *See*—
Baccei, James S. C., 4,367,583, Cl. 29-739.000.
Litz, Donald C.: *See*—
Ying, Sui-Chun; and Litz, Donald C., 4,368,399, Cl. 310-270.000.
Liu, Chao-Min; Prosser, Barbara; and Westley, John, to Hoffmann-La Roche Inc. Culturing a strain of nocardia to produce antibiotic X-14868A. 4,368,265, Cl. 435-75.000.
Liu, Frank C., to RCA Corporation. Video signal defect replacement circuitry. 4,368,483, Cl. 358-36.000.
Llorach, Alfredo B. Collectors of solar energy trapping devices. 4,367,727, Cl. 126-449.000.
Lloyd, John M., to Coated Seed Limited. Use of microorganisms in conjunction with seeds. 4,367,609, Cl. 47-57.600.
Load Cells Inc.: *See*—
Harbers, H. C., Jr., 4,368,364, Cl. 200-6.00R.
Logan, Dale R.; and Buckley, John J., to Westinghouse Electric Corp. Inertially dampened heliostat assembly. 4,367,913, Cl. 350-500.000.
Logic Devices, Inc.: *See*—
Allen, Paul E., 4,367,785, Cl. 165-2.000.
Lohse, Friedrich; and Trachsler, Dieter, to Ciba-Geigy Corporation. Mixtures for the preparation of nitrogen-containing polyadducts. 4,368,317, Cl. 528-323.000.
Lopetegui Legorburu, Jose A., to Maquinaria Geka, S.L. Device for cutting angular profiles applicable to hydraulic shears. 4,367,669, Cl. 83-579.000.
Lorge, Michel; and Houba, Roger, to Solvay & Cie. Device for manufacture of hollow articles. 4,368,027, Cl. 425-527.000.
Lorsch, Johannes. Device for stacking slide frames into a container. 4,367,619, Cl. 53-245.000.
Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, to Block Drug Company Inc. Higher alcohol toxicants effective against insects. 4,368,207, Cl. 424-343.000.
Lovering, Peter, to Bunker Ramo Corporation. Aircraft landing display system. 4,368,517, Cl. 364-428.000.
Lozio, Battista, to Battista Lozio & Figli S.P.A. Tag-attaching gun. 4,367,834, Cl. 227-67.000.
Lubrizol Corporation, The: *See*—
Forsberg, John W., 4,368,133, Cl. 252-75.000.
Luckenbaugh, Raymond W., to Du Pont de Nemours, E. I., and Company. Benzotriazine derivatives as selective weed control agents. 4,368,068, Cl. 71-93.000.
Ludorf, Reiner, to Starkstrom Gummersbach GmbH. Contact arrangement. 4,368,450, Cl. 337-363.000.
Ludwig Riedhammer GmbH & Co. KG: *See*—
Kremheller, Hermann, 4,368,036, Cl. 432-146.000.
Lugosi, Gyorgy: *See*—
Szoke, Sandor; Lugosi, Gyorgy; Bakonyi, Maria; Ghyczy, Jeno; and Csermely, Gyorgy, 4,368,328, Cl. 548-306.000.
Luh, Howard H., to Ford Aerospace & Communications Corporation. Microwave lens ripple filter. 4,368,473, Cl. 343-753.000.
Luk Lamellen und Kupplungsbau GmbH: *See*—
Maucher, Paul; and Friedmann, Oswald, 4,367,703, Cl. 123-198.00F.
Maucher, Paul; and Friedmann, Oswald, 4,367,704, Cl. 123-198.00F.
Lukacs, Julia: *See*—
Kovacs, Laszlo; Moger nee Eremineva, Galina; Gal, Dezso; Hajdu, Peter; Lukacs, Julia; Kroo, Erik; Nemes, Istvan; Nemeth, Andras; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Riederauer, Szilard; and Szepvolgyi, Janos, 4,368,333, Cl. 562-407.000.
Lukaszewicz, Raymond: *See*—
Whittaker, Raymond A.; Lukaszewicz, Raymond; and Ford, John A., 4,367,899, Cl. 299-1.000.
Lukehart, Leonard J.; and Sietmann, Vernon H. Water recreational vehicle. 4,367,689, Cl. 114-346.000.
Lynch, Donald M.: *See*—
Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, 4,368,207, Cl. 424-343.000.
Lyons, Steffen: *See*—
Hannah, Richard E.; and Lyons, Steffen, 4,368,023, Cl. 425-392.000.
M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft: *See*—
Fischer, Hermann, 4,367,678, Cl. 101-350.000.
M-O Valve Company Limited, The: *See*—
Lewis, David W., 4,368,403, Cl. 313-457.000.
Maag Gear-Wheel & Machine Co. Ltd.: *See*—
Spath, Hans; and Donner, Meinrad, 4,368,522, Cl. 364-550.000.
Mabuchi Motor Co. Ltd.: *See*—
Mabuchi, Takaichi, 4,368,398, Cl. 310-248.000.
Mabuchi, Takaichi, to Mabuchi Motor Co. Ltd. Small electric motor with reinforced brush holder. 4,368,398, Cl. 310-248.000.
Mac Engineering & Equip. Co., Inc.: *See*—
Schultz, Carl D.; and Simonton, Robert D., 4,368,373, Cl. 219-86.220.
MacDonald, John T. Foldable farm implement with single port hopper-feeding auger. 4,368,003, Cl. 414-523.000.
Machida, Toyotaka; and Ikemura, Yuichi, to Victor Company of Japan. Automatic white adjusting circuit for a television camera. 4,368,482, Cl. 358-29.000.
Machihara, Akio: *See*—
Asakura, Hiroshi; Kusaka, Masaharu; Hirata, Mituto; and Machihara, Akio, 4,368,088, Cl. 156-143.000.
MacIntosh, John J. Universal radiator assembly. 4,367,793, Cl. 165-151.000.
Madaus, Rolf; Gorler, Klaus; and Molls, Werner, to Dr. Madaus & Co. Method for the extraction of silymarin from plants. 4,368,195, Cl. 424-195.000.
Maeda, Kouzou; and Kamijo, Ken, to Nissan Motor Co., Ltd. Seat belt retractor with a tension eliminator. 4,367,851, Cl. 242-107.700.
Maeda, Yasuteru: *See*—
Watanabe, Katsuyoshi; Andoh, Makoto; Saito, Yasuhisa; Maeda, Yasuteru; and Fukuyama, Yoshiya, 4,368,299, Cl. 525-481.000.
Maejima, Masatsugu; Saruwatari, Koichi; and Isawa, Kazuo, to Fujikura Cable Works, Ltd. Method of surface treatment of porous material. 4,368,107, Cl. 204-24.000.
Maes, Reed E., Jr., to Environmental Research Institute of Michigan. Solar hot water heater. 4,367,726, Cl. 126-422.000.
Magnesep Corporation: *See*—
Colburn, William A., 4,368,387, Cl. 250-251.000.
Magnetic Controls Company: *See*—
Buck, Josef J., 4,367,907, Cl. 339-113.00R.
Maier, Franz: *See*—
Dorr, Karl-Heinz; Grimm, Hugo; Sander, Ulrich; Peichl, Robert; and Maier, Franz, 4,368,183, Cl. 423-522.000.
Maier, Johann: *See*—
Mayer, Johann; Maier, Johann; Mosburger, Hans; and Erl, Michael, 4,368,094, Cl. 156-462.000.
Maier, Ludwig, to Ciba-Geigy Corporation. Process for producing aminomethylphosphonic acid. 4,368,162, Cl. 260-502.50G.
Mainka, Joachim; and Vogl, Gerd. Drafting machine head. 4,367,589, Cl. 33-1.00N.
Major nee Fastner, Piroska: *See*—
Boor nee Mezei, Anna; Toth, Jozsef; Szen, Tamas; Gabor, Laszlo; Major nee Fastner, Piroska; and Holly, Sandor, 4,368,160, Cl. 260-397.400.
Makabe, Hahiro: *See*—
Watanabe, Kazuo; and Makabe, Hahiro, 4,368,414, Cl. 318-696.000.
Malyshev, Vitaly P.: *See*—
Abishev, Dzhantore N.; Buketov, Evnei A.; Shindauletova, Aigul T.; Baltynova, Nazymkul; Babskaya, Ida N.; Kobzhasov, Abubakir K.; Malyshev, Vitaly P.; Bauer, Ivan K.; Mukhamedinov, Murat M.; Kusainov, Temirkhan A.; Orazalina, Kasken N.; and Buketov, Eslambek A., 4,368,176, Cl. 423-25.000.
Manasevit, Harold M., to Rockwell International Corporation. Epitaxial composite and method of making. 4,368,098, Cl. 156-606.000.
Manassen, Joost; Cahen, David; and Hodes, Gary, to Yeda Research and Development Co. Ltd. Process for preparation of semiconductor and semiconductor photoelectrode. 4,368,216, Cl. 427-74.000.
Mangus, James D., to United States of America, Energy. Low chemical concentrating steam generating cycle. 4,367,628, Cl. 60-657.000.
Manino, Anthony P. Tape magazine feed apparatus for head driven fasteners. 4,367,837, Cl. 227-136.000.
Mannesmann Aktiengesellschaft: *See*—
Schnitzer, Heinrich; and Mauermann, Volker, 4,367,867, Cl. 266-190.000.
Wedler, Herbert, 4,368,048, Cl. 440-75.000.
Mannesmann Demag Kunststofftechnik Zweigniederlassung der Mannesmann Demag Aktiengesellschaft: *See*—
Bluml, Hans; and Schmidt, Gerhard, 4,367,655, Cl. 73-862.540.
Manuel, John L. Foldable dental chair. 4,367,894, Cl. 297-19.000.
Mapes, Glenn H.; Kwiatkowski, Jerome A.; and Haynes, J. David, to Ball Corporation. Glassware forming speed control system. 4,368,062, Cl. 65-29.000.
Maquinaria Geka, S.L.: *See*—
Lopetegui Legorburu, Jose A., 4,367,669, Cl. 83-579.000.
Marcus, Edward. Time controlled light dimmer. 4,368,408, Cl. 315-360.000.
Marcus, Israel. Water soluble thymidine derivative. 4,368,138, Cl. 252-363.500.
Marriott Corporation: *See*—
Porter, Stephen T., II; and Gaiser, Paul G., 4,367,604, Cl. 40-564.000.
Marsico, Joseph W., Jr.: *See*—
Meyer, Walter E.; Tomcufcik, Andrew S.; and Marsico, Joseph W., Jr., 4,368,335, Cl. 564-245.000.
Mart, Milam E. Chemical application and developer apparatus for lithographic plate processor. 4,367,940, Cl. 354-317.000.
Martin, Erwin: and Walliser, Konrad, to Siemens Aktiengesellschaft. Transducer plate for piezo-electrical transducers. 4,368,401, Cl. 310-324.000.
Martin, James F. Bowler's approach starting location calculating device. 4,368,044, Cl. 434-249.000.
Martin, Joe O., to Eli Lilly and Company. Cosmetic toner formulation. 4,368,188, Cl. 424-81.000.
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Martone, Leonard P.; and Lavigne, Ronald L., to Martone, Leonard P. Effluent treatment system. 4,368,120, Cl. 210-170.000.

Maruyama, Hiromi; Izumi, Masayuki; Uchikawa, Sadao; and Takeda, Renzo, to Hitachi, Ltd. Method of controlling operation of nuclear reactor. 4,368,171, Cl. 376-217.000.

Maruzen Oil Co., Ltd.: *See*—
Tawara, Kinya; Kamiyama, Hiroki; Nakashizu, Shigenori; Kaneko, Takashi; Wakui, Tadahiro; and Matsumoto, Tadashi, 4,368,337, Cl. 568-613.000.

Maschinenfabrik Augsberg-Nurnberg Aktiengesellschaft: *See*—
Schwarting, Karl H.; Goris, Heinrich; Gunther, Roland; Holz, Joachim; and Ogorek, Kurt, 4,367,902, Cl. 299-42.000.

Maschinenfabrik Koopern GmbH & Co. KG: *See*—
Bergendahl, Hans-Georg, 4,368,165, Cl. 264-40.400.

Mashimo, Yukio; and Iwashita, Tomonori, to Canon Kabushiki Kaisha. Motor driven camera. 4,367,937, Cl. 354-173.000.

Mashino, Zenji: *See*—
Yanagisako, Hiroshi; Kanai, Toshio; Kogawa, Yoshio; Yoshida, Michihiro; Mashino, Zenji; Shimizu, Shin-ichi; Sugiya, Teruo; and Onozaki, Masaki, 4,368,060, Cl. 55-73.000.

Massachusetts Institute of Technology: *See*—
Senturia, Stephen D., 4,368,480, Cl. 357-25.000.

Massey-Ferguson Inc.: *See*—
Fritsch, Joseph E., 4,367,656, Cl. 73-862.650.

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Sakaguchi, Hirofumi; Matsumoto, Ken-ichi; and Masuda, Keiji, 4,367,690, Cl. 118-60.000.

Masuda, Tetsuya: *See*—
Uenaka, Kazushige; Kashiwagi, Shinichi; Tahara, Toshiro; Shirasu, Kazuo; Usui, Yoshio; Abe, Akira; Nakagawa, Fumio; and Masuda, Tetsuya, 4,367,941, Cl. 354-324.000.

Masuhara, Eiichi: *See*—
Yamauchi, Junichi; Masuhara, Eiichi; Nakabayashi, Nobuo; Shibatani, Kyoichiro; and Wada, Tooru, 4,368,043, Cl. 433-217.000.

Masubo, Yasuhiko; and Hara, Takeshi, to Teijin Limited. Protein hybrid having cytotoxicity and process for the preparation thereof. 4,368,149, Cl. 260-112.00B.

Masukawa, Toyoaki: *See*—
Fujiwhara, Mitsuto; Matsuo, Syunji; Wada, Tsuneo; Abe, Naoto; Masukawa, Toyoaki; Iijima, Akio; and Oishi, Keiji, 4,368,258, Cl. 430-493.000.

Masunaga, Makoto: *See*—
Kawai, Tohru; and Masunaga, Makoto, 4,367,931, Cl. 354-23.00D.

Mather & Platt Limited: *See*—
Bray, Geddes A.; and Holker, Richard J., 4,367,861, Cl. 251-61.000.

Mathis, Thomas C.; and Morgan, Albert W., to Monsanto Company. Novel compounds and their use in elastomer-containing compositions. 4,368,341, Cl. 585-25.000.

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Uehara, Haruo; Matsumoto, Shigeyuki; Takatori, Yasushi; Ohta, Tokuya; and Matsufuji, Yohji, 4,368,476, Cl. 346-140.00R.

Matsui, Motoi: *See*—
Hata, Kunio; Oshima, Kihachiro; Kano, Isao; Matsukura, Norio; Umeda, Hiroaki; Matsui, Motoi; Ashida, Tetsushi; Nishiguchi, Yoichi; and Yasui, Nobushige, 4,368,081, Cl. 134-2.000.

Matsui, Tooru, to Minolta Camera Kabushiki Kaisha. Camera with an automatic focusing device. 4,367,934, Cl. 354-25.000.

Matsukura, Norio: *See*—
Hata, Kunio; Oshima, Kihachiro; Kano, Isao; Matsukura, Norio; Umeda, Hiroaki; Matsui, Motoi; Ashida, Tetsushi; Nishiguchi, Yoichi; and Yasui, Nobushige, 4,368,081, Cl. 134-2.000.

Matsumoto, Goichi: *See*—
Moroto, Shuzo; Matsumoto, Goichi; and Hayakawa, Yoichi, 4,367,661, Cl. 74-665.0GE.

Matsumoto, Ken-ichi: *See*—
Sakaguchi, Hirofumi; Matsumoto, Ken-ichi; and Masuda, Keiji, 4,367,690, Cl. 118-60.000.

Matsumoto, Masataka; and Nakajima, Kouichi, to Citizen Watch Co., Ltd. Electrical switch. 4,368,369, Cl. 200-264.000.

Matsumoto, Shigeyuki: *See*—
Uehara, Haruo; Matsumoto, Shigeyuki; Takatori, Yasushi; Ohta, Tokuya; and Matsufuji, Yohji, 4,368,476, Cl. 346-140.00R.

Matsumoto, Shunichi: *See*—
Fujiyama, Susumu; Matsumoto, Shunichi; and Yakamizawa, Yuji, 4,368,336, Cl. 568-428.000.

Matsumoto, Tadashi: *See*—
Tawara, Kinya; Kamiyama, Hiroki; Nakashizu, Shigenori; Kaneko, Takashi; Wakui, Tadahiro; and Matsumoto, Tadashi, 4,368,337, Cl. 568-613.000.

Matsuo, Syunji: *See*—
Fujiwhara, Mitsuto; Matsuo, Syunji; Wada, Tsuneo; Abe, Naoto; Masukawa, Toyoaki; Iijima, Akio; and Oishi, Keiji, 4,368,258, Cl. 430-493.000.

Matsushita Electric Industrial Company, Limited: *See*—
Harigae, Shunji; Yoshida, Tomio; Nakata, Yoshinobu; Nagashima, Michiyoshi; and Sato, Toshio, 4,368,526, Cl. 369-45.000.

Matsuura, Katsumi: *See*—
Usagawa, Yasushi; Fujimatsu, Wataru; Sasaki, Osamu; and Matsuura, Katsumi, 4,368,257, Cl. 430-384.000.

Matsuyama, Youji, to Honda Giken Kogyo Kabushiki Kaisha. Output voltage-adjusting device for vehicle-mounted generators. 4,368,417, Cl. 322-29.000.

Matthews, Ronald D. Method for reducing ammonia concentration in pre-combusted fuel gas using nitric oxide. 4,368,057, Cl. 48-197.00R.

Matz, Robert W.: *See*—
Hinton, Jonathan W.; Powell, Frederick J.; and Matz, Robert W., 4,368,166, Cl. 264-61.000.

Maucher, Paul; and Friedmann, Oswald, to Luk Lamellen und Kupplungsbau GmbH. Apparatus for engaging and disengaging discrete crankshafts in internal combustion engines. 4,367,703, Cl. 123-198.00F.

Maucher, Paul; and Friedmann, Oswald, to Luk Lamellen und Kupplungsbau GmbH. Internal combustion engine with separable crankshafts. 4,367,704, Cl. 123-198.00F.

Mauermann, Vinlker: *See*—
Schnitzer, Heinrich; and Mauermann, Volker, 4,367,867, Cl. 266-190.000.

Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: *See*—
Wunsch, Erich, 4,368,192, Cl. 424-177.000.

May, Stanley: *See*—
Dubuc, Emile; Bourgeois, Maurice; May, Stanley; and Zoeller, Robert, 4,367,831, Cl. 226-14.000.

Mayer, Johann; Maier, Johann; Mosburger, Hans; and Erl, Michael. Production of corrugated cardboard. 4,368,094, Cl. 156-462.000.

Mayeux, Christian: *See*—
Huignard, Jean-Pierre; Le Berre, Serge; Mayeux, Christian; and Micheron, Francois, 4,368,386, Cl. 250-213.00R.

Mazumdar, Ranjit, to Mobil Oil Corporation. Thermoplastic carrying bag with binary polyolefin resin blend. 4,367,841, Cl. 229-54.00R.

MBK Maschinenbau GmbH: *See*—
Pfender, Georg, 4,367,776, Cl. 140-112.000.

McCarthy, Bartholomew J., to Cleasby Manufacturing Co., Inc. Adjustable hot pipe bracket. 4,367,857, Cl. 248-74.00R.

McCartny, Gerald A.; and Curtis, Calvin E. Method and apparatus for heating aggregate. 4,368,035, Cl. 432-13.000.

McCorkle, Richard A., to International Business Machines Corporation. Spot focus flash X-ray source. 4,368,538, Cl. 378-122.000.

McCormick & Company, Inc.: *See*—
Schranz, John L., 4,368,208, Cl. 426-250.000.

McDaniel, Max P., to Phillips Petroleum Company. Titanium impregnated silica-chromium catalysts. 4,368,303, Cl. 526-106.000.

McDaniel, Max P.: *See*—
Hawley, Gil R.; and McDaniel, Max P., 4,368,301, Cl. 526-100.000.

McDonnell Douglas Corporation: *See*—
Palmer, Raymond J.; and Micheaux, Dominique, 4,368,234, Cl. 428-245.000.

McFadden, Richard D., to Labatt Brewing Company Limited. Container. 4,367,840, Cl. 229-39.00R.

McGarvey, John N.: *See*—
Genaro, Donald M.; and McGarvey, John N., 4,368,359, Cl. 179-146.00R.

McGhie, Joseph A.: *See*—
Light, Kenneth K.; McGhie, Joseph A.; Fujioka, Futoshi; and Yoshida, Takao, 4,368,128, Cl. 252-8.900.

McGregor, Rob R.: *See*—
Cross, Henry D., III; Eaton, Charles C., Jr.; Larsen, John; and McGregor, Rob R., 4,367,600, Cl. 36-127.000.

McGregor, Robert I., to Nordic Diving Salvage & Marine Contractors Ltd. Roller chain-connecting tool. 4,367,862, Cl. 254-231.000.

McKnight, Harold F.: *See*—
Johnson, Harold R.; McKnight, Harold F.; and Ferguson, Richard, 4,367,631, Cl. 62-79.000.

McPhail, Andrew T.: *See*—
Spielvogel, Bernard F.; McPhail, Andrew T.; and Hall, Iris H., 4,368,194, Cl. 424-185.000.

Mead Corporation, The: *See*—
Donahue, John W., 4,368,475, Cl. 346-75.000.
Suttles, James M., 4,367,818, Cl. 211-49.00D.

Mechanical Technology Incorporated: *See*—
Vitale, Nicholas G., 4,367,625, Cl. 60-517.000.

Medtronic Inc.: *See*—
Jirak, Thomas L., 4,367,753, Cl. 128-708.000.

Meigs, William M. Truck load binder tightener. 4,367,993, Cl. 410-103.000.

Melotti, Athos. Bubbles emitting toy vehicle. 4,367,608, Cl. 46-7.000.

Meltzer, David, to International Business Machines Corp. Partial roll mode transfer for cyclic bulk memory. 4,368,513, Cl. 364-200.000.

Menard, Roger O. Heavy duty emergency power pack for vehicle trailer. 4,368,455, Cl. 340-74.000.

Mentlik, Anton A., to Eli Lilly and Company. Cosmetic moisturizer formulation. 4,368,189, Cl. 424-81.000.

Mentlik, Anton A.: *See*—
Flom, Merlyn G.; Herrold, Anne M.; Martin, Joe O.; Mentlik, Anton A.; and Warrick, Patricia P., 4,368,187, Cl. 424-81.000.

Merck & Co., Inc.: *See*—
Shen, Tsung-Ying; Durette, Philippe L.; Dorn, Conrad P., Jr.; Doherty, James B.; and Dean, Richard T., 4,368,190, Cl. 424-88.000.

Merica, Joseph S. Variable length torque rod. 4,367,663, Cl. 81-177.00A.

Merrick Corporation, The: *See*—
Merrick, George J.; Cook, George E.; and Modglin, Donald D., 4,368,375, Cl. 219-125.120.

Merrick, George J.; Cook, George E.; and Modglin, Donald D., to Merrick Corporation, The. Welding torch oscillating mechanical apparatus. 4,368,375, Cl. 219-125.120.

Mertes, Rudolf: *See*—
Hocker, Jurgen; Mertes, Rudolf; and Fitzky, Hans G., 4,368,319, Cl. 528-353.000.

Merz, Walter: *See*—
Wieland, Dieter; and Merz, Walter, 4,367,813, Cl. 192-17.00R.

Messer Griesheim: *See—*
Dilthey, Ulrich; Eichhorn, Friedrich; Hirsch, Peter; Holbach, Peter; and Lettner, Kurt, 4,368,371, Cl. 219-73.000.

Messer, Steve. Golf tee with holding cup with spin control member. 4,367,879, Cl. 273-211.000.

Messerschmitt-Boelkow-Blohm GmbH: *See—*
Paulokat, Horst, 4,367,637, Cl. 62-292.000.

Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See—*
Egert, Karl-Heinz; Wank, Joachim; and Reese, Eckart, 4,368,231, Cl. 428-220.000.
Kohler, Kranz, 4,367,581, Cl. 29-572.000.

Mestrallet, Joelle; Heck, Gerard; and Kaiser, Victor, to Compagnie Francaise d'Etudes et de Construction "Technip". Method of and apparatus for manufacturing ethylene. 4,368,061, Cl. 62-28.000.

Metallgesellschaft Aktiengesellschaft: *See—*
Doerges, Alexander; Kriebel, Manfred; and Schlauer, Johann, 4,368,059, Cl. 55-73.000.
Dorr, Karl-Heinz; Grimm, Hugo; Sander, Ulrich; Peichl, Robert; and Maier, Franz, 4,368,183, Cl. 423-522.000.
Schnabel, Wolfram; Reuter, Gerhard; and Lausch, Herbert, 4,368,177, Cl. 423-175.000.

Metallwerk Max Brose GmbH & Co.: *See—*
Becker, Herbert; Schelhorn, Gerhard; and Sunkel, Manfred, 4,367,660, Cl. 74-625.000.

Metropolitan Sanitary District of Greater Chicago, The: *See—*
Venuso, Nicholas A., 4,367,652, Cl. 73-861.000.

Meyer, Walter E.; Tomcufcik, Andrew S.; and Marsico, Joseph W., Jr., to American Cyanamid Company. N'-(2,6-Dichloro-4-(substituted-benzylamino)phenyl)-N,N-dimethyl-formamidines. 4,368,335, Cl. 564-245.000.

Michaels, Alan S., to Alza Corporation. Dispenser powered by cross-linked hydrophilic polymer grafted to hydrophilic polymer. 4,367,741, Cl. 128-260.000.

Micheaux, Dominique: *See—*
Palmer, Raymond J.; and Micheaux, Dominique, 4,368,234, Cl. 428-245.000.

Micheron, Francois: *See—*
Huignard, Jean-Pierre; Le Berre, Serge; Mayeux, Christian; and Micheron, Francois, 4,368,386, Cl. 250-213.00R.

Micro-Circuits Company: *See—*
Bradley, Robert F., 4,367,957, Cl. 368-114.000.

Midland, Richard W., to Zenith Radio Corporation. Billboard large screen TV. 4,368,485, Cl. 358-64.000.

Midorikawa, Minoru: *See—*
Kimura, Susumu; Ario, Hiroyosi; and Midorikawa, Minoru, 4,367,719, Cl. 123-568.000.

Midwest Biochemical Corp.: *See—*
Weber, Meyer M.; and Shovers, John, 4,368,270, Cl. 435-226.000.

Mielke, Klaus H. Electromagnetic wire printer. 4,367,677, Cl. 101-124.000.

Migitaka, Masatoshi: *See—*
Mizukami, Koichiro; and Migitaka, Masatoshi, 4,368,230, Cl. 428-203.000.

Miller, Charles K.; and Northam, William D., to Codex Corporation. Programmable digital detector for the demodulation of angle modulated electrical signals. 4,368,434, Cl. 329-50.000.

Miller, Robert C., to Westinghouse Electric Corp. Mutual inductance current transducer for AC electric energy meters. 4,368,424, Cl. 324-142.000.

Milligan, Donald L., to Hoyle Marine Limited. Connector device. 4,367,979, Cl. 405-70.000.

Mills, King L.; and Cheng, Paul J., to Phillips Petroleum Company. Carbon black production. 4,368,182, Cl. 423-450.000.

Mimura, Koji: *See—*
Setsuie, Takashi; Mimura, Koji; and Okamura, Kiyonobu, 4,368,227, Cl. 428-91.000.

Minnesota Mining and Manufacturing Company: *See—*
Katritzky, Alan R.; Graphakos, Basil J.; Lhommet, Girard A. F.; and Reynolds, Kenneth, 4,368,329, Cl. 549-13.000.
Moris, Alfred H., 4,367,850, Cl. 242-55.19A.
Tung, Chi F.; and Fellows, Benjamin T., 4,367,919, Cl. 350-105.000.
Tung, Chi F.; and Coderre, James C., 4,367,920, Cl. 350-105.000.
Welage, Norbert A., 4,367,745, Cl. 128-303.130.

Minolta Camera Kabushiki Kaisha: *See—*
Ishikawa, Norio; Taniguchi, Nobuyuki; and Yuasa, Yoshio, 4,367,932, Cl. 354-23.00D.
Matsui, Tooru, 4,367,934, Cl. 354-25.000.
Sahara, Masayoshi, 4,367,933, Cl. 354-23.00D.

Minomiya, Eiichi: *See—*
Tada, Kuniyuki; Minomiya, Eiichi; and Inoue, Takehisa, 4,368,339, Cl. 570-202.000.

Mitsubishi Chemical Industries Ltd.: *See—*
Hayashi, Masahiro; Yoshimura, Tamotsu; Mukai, Seiichi; Shikama, Masaharu; Kusumoto, Hideto; and Yamanouchi, Hideki, 4,368,286, Cl. 524-394.000.
Muroi, Kaname; and Fujino, Hiroko, 4,368,105, Cl. 204-1.00T.
Tanaka, Toru; and Tanaka, Eiji, 4,368,305, Cl. 526-116.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Sakuma, Kiyoshi; Nakazima, Isamu; and Sugiyama, Tetuo, 4,367,636, Cl. 62-262.000.
Terazono, Narihiro; and Kajiyama, Ryuichi, 4,368,518, Cl. 364-433.000.
Wakamiya, Yoshinori, 4,368,034, Cl. 432-11.000.

Mitsubishi Gas Chemical Company, Inc.: *See—*
Fujiyama, Susumu; Matsumoto, Shunichi; and Yakamizawa, Yuji, 4,368,336, Cl. 568-428.000.

Mitsubishi Petrochemical Company, Ltd.: *See—*
Yui, Hiroshi; Kakizaki, Tetsuji; Nishiya, Yashinori; and Horie, Shinji, 4,368,280, Cl. 523-211.000.

Mitsubishi Rayon Co., Ltd.: *See—*
Kishida, Kazuo; Sasaki, Isao; and Mori, Hiroshi, 4,368,283, Cl. 524-109.000.
Setsuie, Takashi; Mimura, Koji; and Okamura, Kiyonobu, 4,368,227, Cl. 428-91.000.

Mitsuhata, Masashi; Watanabe, Fumio; and Kumazawa, Toshihiko, to Nippon Shokubai Kagaku Kogyo Co., Ltd. Silver catalyst for production of ethylene oxide. 4,368,144, Cl. 252-463.000.

Mitsui, Hisami: *See—*
Kurosawa, Keiji; Yamamoto, Kenji; Yamashita, Mitsuo; Mitsui, Hisami; Miyabara, Ayako; Miyagawa, Kiyotaka; and Imura, Takayoshi, 4,368,503, Cl. 361-414.000.

Miura, Yoshiharu; Okazaki, Mitsuo; Komemushi, Setsuo; Sakata, Tenji; Shiroza, Satoshi; and Obana, Satoshi, to Sekisui Kagaku Kogyo Kabushiki Kaisha; and Miura, Yoshiharu. Production of microbial cells from methanol. 4,368,271, Cl. 435-247.000.

Miyabara, Ayako: *See—*
Kurosawa, Keiji; Yamamoto, Kenji; Yamashita, Mitsuo; Mitsui, Hisami; Miyabara, Ayako; Miyagawa, Kiyotaka; and Imura, Takayoshi, 4,368,503, Cl. 361-414.000.

Miyagawa, Kiyotaka: *See—*
Kurosawa, Keiji; Yamamoto, Kenji; Yamashita, Mitsuo; Mitsui, Hisami; Miyabara, Ayako; Miyagawa, Kiyotaka; and Imura, Takayoshi, 4,368,503, Cl. 361-414.000.

Miyahara, Junji: *See—*
Takahashi, Kenji; and Miyahara, Junji, 4,368,390, Cl. 250-363.00R.

Miyaji, Mikio: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Shigehara, Itaru; and Miyaji, Mikio, 4,368,340, Cl. 570-207.000.

Miyajima, Masazumi: *See—*
Sato, Akihiro; Uwai, Toshihiro; Hanari, Tohru; Kikuta, Kazutsune; and Miyajima, Masazumi, 4,368,304, Cl. 526-114.000.

Miyake, Tetsuya; Takeda, Kunihiko; and Onitsuka, Hatsuki, to Asahi Kasei Kogyo Kabushiki Kaisha. Ion exchange enrichment of uranium isotopes. 4,368,175, Cl. 423-7.000.

Miyake, Yasufumi: *See—*
Kakuhashi, Takeshi; and Miyake, Yasufumi, 4,368,252, Cl. 430-312.000.

Miyamoto, Yoshihiro: *See—*
Unotoro, Tomoyuki; Tanikawa, Kunihiro; Kurahashi, Keizo; Yamaguchi, Hisashi; Ito, Yuichiro; and Miyamoto, Yoshihiro, 4,368,467, Cl. 340-799.000.

Miyazaki, Yorizo, to Laurel Bank Machine Co., Ltd. Guide device for guiding wrapping paper in coin wrapping machine. 4,367,617, Cl. 53-212.000.

Miyoshi, Hajime; Okabayashi, Ikuo; and Asanagi, Etsuo, to Chiyoda Chemical Engineering & Construction Co., Ltd. Method for improving the strength of a water-saturated soft soil. 4,367,986, Cl. 405-266.000.

Miyoshi, Takeo; Nagai, Takanori; and Ii, Akira, to Toyota Jidosha Kogyo Kabushiki Kaisha. Run on prevention system supplying maximum exhaust gas recirculation. 4,367,720, Cl. 123-571.000.

Mizuguchi, Ryuzo: *See—*
Ishikura, Shinichi; Ishii, Keizou; Kanda, Kazunori; and Mizuguchi, Ryuzo, 4,368,287, Cl. 524-513.000.

Mizukami, Koichiro; and Migitaka, Masatoshi, to VLSI Technology Research Association. Photomask. 4,368,230, Cl. 428-203.000.

Mizuno, Mitsuo; Suginaka, Akinori; Fujii, Masahiko; and Akimoto, Shinichi, to Nippon Oil and Fats Company, Ltd. Molded, storage stable suppository base composition of specified amounts of polyethylene glycol, fatty acid triglyceride and alkylene oxide derivative. 4,368,185, Cl. 424-78.000.

Mizuno, Tiaki, to Nippondenso Co., Ltd. Contactless ignition system for internal combustion engine. 4,367,722, Cl. 123-644.000.

Mizuno, Yoshikazu: *See—*
Totani, Shinzo; Kato, Takaaki; Mizuno, Yoshikazu; and Noda, Munetaka, 4,367,805, Cl. 180-179.000.

Mizusawa, Akira; and Notoya, Yoshiaki, to Nifco Inc. Quick-acting expansible fastener. 4,367,995, Cl. 411-57.000.

Mizutani, Kiyokazu: *See—*
Endo, Takeshi; Mizutani, Kiyokazu; and Ogasawara, Takahisa, 4,368,314, Cl. 528-89.000.

Mizutani, Tomihiko, to Inoue MTP Kabushiki Kaisha. Apparatus for bending and twisting elongated pieces. 4,367,641, Cl. 72-65.000.

Mobil Oil Corporation: *See—*
Audeh, Constandi A.; and Dickert, Joseph J., Jr., 4,368,126, Cl. 210-663.000.
Chester, Arthur W.; Cormier, William E., Jr.; and Stover, William A., 4,368,114, Cl. 208-120.000.
Horodysky, Andrew G.; and Kaminski, Joan M., 4,368,129, Cl. 252-32.70E.
Hubbard, Jack L., deceased, 4,367,982, Cl. 405-202.000.
Mazumdar, Ranjit, 4,367,841, Cl. 229-54.00R.
Valyocsik, Ernest W., 4,368,174, Cl. 422-208.000.

Modglin, Donald D.: *See—*
Merrick, George J.; Cook, George E.; and Modglin, Donald D., 4,368,375, Cl. 219-125.120.

Modic, Frank J.; and Boudreau, Bruce E., to General Electric Company. Method for mechanically foaming silicone compositions. 4,368,279, Cl. 521-122.000.

Moger nee Eremineva, Galina: *See*—
Kovacs, Laszlo; Moger nee Eremineva, Galina; Gal, Dezso; Hajdu, Peter; Lukacs, Julia; Kroo, Erik; Nemes, Istvan; Nemeth, Andras; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Riederauer, Szilard; and Szepvolgyi, Janos, 4,368,333, Cl. 562-407.000.

Moinet, Gerard H.: *See*—
Ancher, Jean-Francois R.; Lacour, Alain P.; Moinet, Gerard H.; and Tisne-Versailles, Jacky A., 4,368,199, Cl. 424-250.000.

Moitzfeld, Winfried, to G. Siempelkamp GmbH & Co. Apparatus for producing vulcanized belts with steel reinforcement. 4,368,014, Cl. 425-28.00B.

Mollet, Herbert; and Wyrsch, Dieter, to Ciba-Geigy AG. Process for production of masked positive color images by the silver dye bleach process and the silver dye bleach material used in this process. 4,368,256, Cl. 430-359.000.

Molls, Werner: *See*—
Madaus, Rolf; Gorler, Klaus; and Molls, Werner, 4,368,195, Cl. 424-195.000.

Monsanto Company: *See*—
Mathis, Thomas C.; and Morgan, Albert W., 4,368,341, Cl. 585-25.000.

Montanwerke Walter GmbH: *See*—
Grafe, Werner; and Held, Paul, 4,367,991, Cl. 408-224.000.

Moore, Ernest P.: *See*—
Chung, Li-Jin W.; Moore, Ernest P.; Porter, Glendon R.; and Rizzo, Joseph F., 4,368,361, Cl. 179-170.200.
Chung, Li-Jin W.; Moore, Ernest P.; Porter, Glendon R.; and Rizzo, Joseph F., 4,368,362, Cl. 179-170.200.

Mora, Emilio W.: *See*—
Jimenez, Humberto D.; and Mora, Emilio W., 4,368,173, Cl. 422-197.000.

Moranne, Jean-Pierre, to Societe Anonyme des Usines Chausson. Industrial cooling exchanger used for cooling air or other gases. 4,367,789, Cl. 165-76.000.

Morbidelli, Massimo: *See*—
Carra, Sergio; Santacesaria, Elio; Morbidelli, Massimo; Codignola, Franco; and DiFiore, Lucio, 4,368,347, Cl. 585-828.000.

Moretti, Luciano; and Dotti, Giulio, to Centro Ricerche Fiat S.p.A. Flow regulator for hydraulic circuits. 4,367,765, Cl. 137-881.000.

Moretto, Hans-Heinrich: *See*—
Alberts, Heinrich; Friemann, Hans; Moretto, Hans-Heinrich; and Sattlegger, Hans, 4,368,290, Cl. 525-29.000.

Morgan, Albert W.: *See*—
Mathis, Thomas C.; and Morgan, Albert W., 4,368,341, Cl. 585-25.000.

Mori, Hiroshi: *See*—
Kishida, Kazuo; Sasaki, Isao; and Mori, Hiroshi, 4,368,283, Cl. 524-109.000.

Mori, Kenzo; Yasuda, Hyo; and Koshi, Masaru, to Taiyo Musen Co. Ltd. Radio direction finder. 4,368,470, Cl. 343-113.00R.

Morin, Roger W. Euchre scoring computer and method. 4,368,516, Cl. 364-411.000.

Morinaga, Akio: *See*—
Ontsuga, Hisao; Morinaga, Akio; and Morita, Akira, 4,368,091, Cl. 156-287.000.

Morioka, Masayoshi; and Kawashima, Sadao, to Asahi Fiber Glass Company Limited. Glass fiber mat and method of preparation thereof. 4,368,232, Cl. 428-228.000.

Moris, Alfred H., to Minnesota Mining and Manufacturing Co. Endless loop tape cartridge. 4,367,850, Cl. 242-55.19A.

Morita, Akira: *See*—
Ontsuga, Hisao; Morinaga, Akio; and Morita, Akira, 4,368,091, Cl. 156-287.000.

Moriyama, Masakazu: *See*—
Hayashi, Kunihisa; and Moriyama, Masakazu, 4,368,426, Cl. 324-161.000.
Hayashi, Kunihisa; and Moriyama, Masakazu, 4,368,427, Cl. 324-161.000.

Morlock, Gerhard: *See*—
Aldinger, Werner; Anzt, Helmut; Morlock, Gerhard; and Schaufler, Hans-Peter, 4,368,320, Cl. 528-355.000.

Moroto, Shuzo; Matsumoto, Goichi; and Hayakawa, Yoichi, to Aisin-Warner Kabushikikaisha. Transmission for four-wheel drive vehicles. 4,367,661, Cl. 74-665.0GE.

Morrison, John C.: *See*—
Bucovaz, Edsel T.; Whybrew, Walter D.; and Morrison, John C., 4,368,262, Cl. 435-23.000.

Mosburger, Hans: *See*—
Mayer, Johann; Maier, Johann; Mosburger, Hans; and Erl, Michael, 4,368,094, Cl. 156-462.000.

Moskov, Ruslan N.: *See*—
Rubinshtein, Georgy M.; Yatsenko, Sergei P.; Diev, Valery N.; Zlokazova, Tatyana M.; Fomin, Eduard S.; Moskov, Ruslan N.; Grigorieva, Anastasia D.; Davydov, Ivan V.; Starkov, Evgeny N.; Ovsyannikov, Vladimir I.; Eremeev, Arnold F.; and Lavrenchuk, Vladimir N., 4,368,108, Cl. 204-43.00R.

Motorola Inc.: *See*—
Ecklund, Lawrence M.; and Drong, Frank, Jr., 4,368,356, Cl. 179-1.0GS.
Kyu, Shikun; and Hepworth, Edward C., 4,368,512, Cl. 364-200.000.

Mottier, Patrick; and Valette, Serge, to Commissariat a l'Energie Atomique. Fresnel lens for integrated optics. 4,367,916, Cl. 350-96.120.

Motzkus, Gert; and Fohn, Kurt, to BASF Wyandotte Corporation. Solvent bleed-fast, deep-shade disperse dyed textile material. 4,368,055, Cl. 8-662.000.

Mucaria, Gasper. Glass units. 4,368,226, Cl. 428-34.000.

Muff, Nicholas S. Extractor for removing broken tubing tips from catheter hubs. 4,367,577, Cl. 29-234.000.

Mukai, Seiichi: *See*—
Hayashi, Masahiro; Yoshimura, Tamotsu; Mukai, Seiichi; Shikama, Masaharu; Kusumoto, Hideto; and Yamanouchi, Hideki, 4,368,286, Cl. 524-394.000.

Mukasa, Shizuo, to Olympus Optical Co., Ltd. Microscope equipped with a micro manipulator. 4,367,914, Cl. 350-530.000.

Mukhamedinov, Murat M.: *See*—
Abishev, Dzhantore N.; Buketov, Evnei A.; Shindauletova, Aigul T.; Baltynova, Nazymkul; Babskaya, Ida N.; Kobzhasov, Abubakir K.; Malyshev, Vitaly P.; Bauer, Ivan K.; Mukhamedinov, Murat M.; Kusainov, Temirkhan A.; Orazalina, Kasken N.; and Buketov, Eslambek A., 4,368,176, Cl. 423-25.000.

Mulhollam, Gail R.: *See*—
Clinard, Glenn G.; Guth, Kenneth C.; Mulhollam, Gail R.; and Volk, Frank J., 4,368,460, Cl. 340-522.000.

Muller, Walter, to Lingl Corporation. Apparatus and method for adjusting pallet-mounted saggers. 4,368,033, Cl. 432-6.000.

Mumcu, Salih; and Feldmann, Rainer, to Chemische Werke Huls AG. Method of using copolyether ester amides as thermoplastic adhesives for heat sealing textiles. 4,368,090, Cl. 156-283.000.

Murakami, Sanpei; Kokeguchi, Sadao; Takahashi, Hiroshi; and Okada, Ken, to Kanebo Foods, Ltd. Instant-cooking dry macaroni and like dry foods. 4,368,210, Cl. 426-557.000.

Murakami, Yutaka: *See*—
Tosaka, Osamu; Murakami, Yutaka; Ikeda, Shigeho; and Yoshii, Hiroe, 4,368,266, Cl. 435-110.000.

Murayama, Naohiro: *See*—
Obata, Sukiro; Murayama, Naohiro; and Fujii, Teruo, 4,368,525, Cl. 367-165.000.

Muroi, Kaname; and Fujino, Hiroko, to Mitsubishi Chemical Industries Limited. Electrolytic solution for Karl Fischer coulometric titration. 4,368,105, Cl. 204-1.00T.

Murphey, Joseph R., to Halliburton Services. Aqueous gel composition for temporary stabilization of subterranean well formation. 4,368,136, Cl. 252-316.000.

Murray, James D., to Passavant-Werke AG & Co. KG. Apparatus for extracting liquid from a suspension. 4,368,125, Cl. 210-403.000.

Murray, Malcolm G., Jr. Alignment system. 4,367,594, Cl. 33-181.00R.

Mutke, Hans G. Isolation apparatus. 4,367,728, Cl. 128-1.00R.

Mutou, Norishige: *See*—
Ogata, Yasuhiro; and Mutou, Norishige, 4,367,624, Cl. 60-484.000.

Muzzarelli, Riccardo, to Anic, S.p.A. Chitosan-glucan complex, method for its production and end uses. 4,368,322, Cl. 536-20.000.

Myakina, Ninel I.: *See*—
Kotlyarevsky, Izrail L.; Myakina, Ninel I.; Kamkha, Mikhail A.; Ikryanov, Ivan M.; and Glyadinskaya, Svetlana A., 4,368,343, Cl. 585-456.000.

Myers, James E.: *See*—
Ibrahim, Fayez F.; Subera, Elmer J.; and Myers, James E., 4,367,632, Cl. 62-82.000.

Naaktgeboren, Adrianus; and Vansteelant, Marc G., to Sperry Corporation. Bale wagons. 4,368,000, Cl. 414-111.000.

Nagai, Kunihiko: *See*—
Komatsu, Shigeru; Nagai, Kunihiko; Koyama, Takuo; Tachiuchi, Tsuguji; Kobayashi, Mikiaki; and Kurita, Toshiyuki, 4,368,461, Cl. 340-703.000.

Nagai, Takanori: *See*—
Miyoshi, Takeo; Nagai, Takanori; and Ii, Akira, 4,367,720, Cl. 123-571.000.

Nagashima, Michiyoshi: *See*—
Harigae, Shunji; Yoshida, Tomio; Nakata, Yoshinobu; Nagashima, Michiyoshi; and Sato, Toshio, 4,368,526, Cl. 369-45.000.

Nagata, Koji; Sudo, Kyuji; Nishikawa, Mamoru; and Tachibana, Kikuji, to Sumitomo Light Metal Industries Ltd. Method and apparatus for coating the inner surface of long tubes of small diameter. 4,368,219, Cl. 427-236.000.

Naimer, Hubert L. Computer-controlled switching device. 4,368,394, Cl. 307-115.000.

Naito, Junichiro; Yamamoto, Shinichi; Suzuki, Zituo; and Asano, Mitsuru, to Nippon Soken, Inc. Extrusion device for producing honeycomb structures. 4,368,025, Cl. 425-462.000.

Nakabayashi, Nobuo: *See*—
Yamauchi, Junichi; Masuhara, Eiichi; Nakabayashi, Nobuo; Shibatani, Kyoichiro; and Wada, Tooru, 4,368,043, Cl. 433-217.000.

Nakagawa, Fumio: *See*—
Uenaka, Kazuhige; Kashiwagi, Shinichi; Tahara, Toshiro; Shirasu, Kazuo; Usui, Yoshio; Abe, Akira; Nakagawa, Fumio; and Masuda, Tetsuya, 4,367,941, Cl. 354-324.000.

Nakagawa, Kazuhiko: *See*—
Kawahara, Masakatsu; Amano, Itaru; Nakagawa, Kazuhiko; Fujieda, Yasuhiko; Ureshino, Kashiro; and Asada, Mitsunori, 4,368,015, Cl. 425-29.000.

Nakagawa, Masao: *See*—
Senda, Kenichi; Nishida, Tatehiko; and Nakagawa, Masao, 4,368,218, Cl. 427-222.000.

Nakagome, Takenari: *See*—
Yamada, Hirotada; Nakagome, Takenari; and Komatsu, Toshiaki, 4,368,198, Cl. 424-246.000.

Nakajima, Kaoru; Kobayashi, Kunio; and Hisagen, Yoshiaki, to Sony Corporation. Magnetic recording medium. 4,368,239, Cl. 428-421.000.

Nakajima, Kaoru; Somezawa, Masashi; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, to Sony Corporation; and Shin-Etsu Chemical Co., Ltd. Magnetic recording medium. 4,368,242, Cl. 428-447.000.

Nakajima, Kouichi: *See*—
Matsumoto, Masataka; and Nakajima, Kouichi, 4,368,369, Cl. 200-264.000.

Nakamura, Hiroya, to Konishiroku Photo Industry Co., Ltd. Apparatus for providing recording compensation for rotating drum speed fluctuations in an information recording apparatus. 4,367,943, Cl. 355-3.00R.

Nakamura, Hiroyuki; Shikata, Makoto; and Ohgami, Masaaki, to Fuji Jukogyo Kabushiki Kaisha; and Nissan Motor Co., Ltd. System for regulating the engine speed. 4,367,708, Cl. 123-339.000.

Nakamura, Kazuhisa; and Arakawa, Hideki, to Fujitsu Limited. Semiconductor device. 4,368,524, Cl. 365-226.000.

Nakanishi, Teruyuki; and Hitomi, Kiyoshi, to Kawasaki Steel Corporation. Method of producing H-beams. 4,367,642, Cl. 72-234.000.

Nakano, Tasuku: *See*—
Izawa, Minoru; Takeda, Nobuhiro; and Nakano, Tasuku, 4,368,393, Cl. 307-115.000.

Nakano, Tsunetomo; Nishio, Kazuaki; Watanabe, Hiroshi; and Yasuno, Hiroshi, to Ube Industries, Ltd. Photosetting composition containing modified epoxy resins and an oligoester diacrylate compound. 4,368,300, Cl. 525-531.000.

Nakashizu, Shigenori: *See*—
Tawara, Kinya; Kamiyama, Hiroki; Nakashizu, Shigenori; Kaneko, Takashi; Wakui, Tadahiro; and Matsumoto, Tadashi, 4,368,337, Cl. 568-613.000.

Nakata, Yoshinobu: *See*—
Harigae, Shunji; Yoshida, Tomio; Nakata, Yoshinobu; Nagashima, Michiyoshi; and Sato, Toshio, 4,368,526, Cl. 369-45.000.

Nakazato, Masao: *See*—
Yoneda, Kenji; Sakata, Kazuhiro; Yuminaka, Takeo; Nakazato, Masao; Kurihara, Tomiaki; Kuzunuki, Soshiro; and Katayama, Yasunori, 4,367,811, Cl. 187-29.00R.

Nakazima, Isamu: *See*—
Sakuma, Kiyoshi; Nakazima, Isamu; and Sugiyama, Tetuo, 4,367,636, Cl. 62-262.000.

Narasaka, Shin: *See*—
Otsuka, Kazuo; Narasaka, Shin; and Hasegawa, Shumpei, 4,367,713, Cl. 123-440.000.

National Research Development Corporation: *See*—
Jones, Robert L.; and Wilson, Norman H., 4,368,332, Cl. 560-120.000.
Sinclair, David A.; and Smith, Ian R., 4,367,648, Cl. 73-620.000.

National Starch and Chemical Corporation: *See*—
Heckman, Erwin, 4,368,212, Cl. 426-579.000.

National Steel Corporation: *See*—
Saunders, William T., 4,367,996, Cl. 413-14.000.

Nauta, Jan P.; and Kos, Jacob J., to Nauta Roll Corporation. High gloss rubber roll. 4,368,240, Cl. 428-447.000.

Nauta, Randal W., to C. L. Frost & Son, Inc. Wheeled support assembly for conveyors with locking and fastening feature. 4,367,905, Cl. 308-182.000.

Nauta Roll Corporation: *See*—
Nauta, Jan P.; and Kos, Jacob J., 4,368,240, Cl. 428-447.000.

Nees, John M.: *See*—
Channing, Harry M.; Nees, John M.; and Eberle, William J., 4,367,582, Cl. 29-623.100.

Nefedov, Vladimir P.: *See*—
Dobrokhtova, Marina K.; Evseev, Bladimir A.; Artsis, Evgeny S.; Enenshtein, Gennady A.; Cheburashko, Boris P.; Platoshkina, Maria G.; Nefedov, Vladimir P.; and Valyshkina, Ljudmila I., 4,368,318, Cl. 528-326.000.

Nemes, Istvan: *See*—
Kovacs, Laszlo; Moger nee Eremineva, Galina; Gal, Dezso; Hajdu, Peter; Lukacs, Julia; Kroo, Erik; Nemes, Istvan; Nemeth, Andras; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Riederauer, Szilard; and Szepvolgyi, Janos, 4,368,333, Cl. 562-407.000.

Nemeth, Andras: *See*—
Kovacs, Laszlo; Moger nee Eremineva, Galina; Gal, Dezso; Hajdu, Peter; Lukacs, Julia; Kroo, Erik; Nemes, Istvan; Nemeth, Andras; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Riederauer, Szilard; and Szepvolgyi, Janos, 4,368,333, Cl. 562-407.000.

Nessel, Elizer: *See*—
Porat, Reuven; and Nessel, Elizer, 4,367,990, Cl. 407-114.000.

Neu, Hans: *See*—
Herden, Werner; Hochenberger, Hans-Martin; Neu, Hans; Seidel, Hans-Joachim; Pfander, Werner; Gruner, Heiko; Zabler, Erich; Pilch, Claus-Dietrich; and Linn, Karl-Otto, 4,368,453, Cl. 338-25.000.

Neuhouser, Donald E., to Harvey Hubbell Incorporated. Ground conductor monitoring system. 4,368,498, Cl. 361-48.000.

New York University: *See*—
Rugg, Barry A.; and Brenner, Walter, 4,368,079, Cl. 127-1.000.

Newcomb, Kermit T., to Burlington Industries, Inc. Guide for withdrawing yarn from a filling measuring and supplying device for a loom. 4,367,773, Cl. 139-452.000.

Newcomer, John R.: *See*—
Barlow, Gordon A.; Newcomer, John R.; Krutsch, John R.; and Bezark, Fred, 4,367,875, Cl. 273-85.00F.

Newton, Alan B.; Nield, Eric; and Singh, Vir B., to Imperial Chemical Industries Limited. Films from compositions of polyesters and olefine polymers. 4,368,295, Cl. 525-166.000.

Nieddu, Mario, to Cinelli Cino & C. S.r.l. Armature for bicycle saddles. 4,367,896, Cl. 297-195.000.

Nield, Eric, to Imperial Chemical Industries Limited. Fast crystallizing polyester compositions. 4,368,288, Cl. 524-539.000.

Nield, Eric: *See*—
Newton, Alan B.; Nield, Eric; and Singh, Vir B., 4,368,295, Cl. 525-166.000.

Nielsen, Carl J., to Atari, Inc. Bank switchable memory system. 4,368,515, Cl. 364-200.000.

Nifco Inc.: *See*—
Mizusawa, Akira; and Notoya, Yoshiaki, 4,367,995, Cl. 411-57.000.

Nihonshikizai Kogyo Co., Ltd.: *See*—
Iwamoto, Seigo; and Saito, Eiichi, 4,368,161, Cl. 260-448.00R.

Niiya, Masamichi: *See*—
Sato, Akira; Niiya, Masamichi; Takeuchi, Masayuki; Fukai, Masaru; and Shintani, Sotokichi, 4,368,360, Cl. 179-170.200.

Nikiforov, Lev I.: *See*—
Sarkisov, Arutjun K.; and Nikiforov, Lev I., 4,368,191, Cl. 424-88.000.

Ninomiya, Yoshinobu: *See*—
Somezawa, Masashi; Ninomiya, Yoshinobu; and Hashimoto, Akira, 4,368,238, Cl. 428-413.000.

Nippon Kogaku K.K.: *See*—
Shirasu, Hiroshi; Ogasawara, Akira; and Utagawa, Ken, 4,368,383, Cl. 250-201.000.

Nippon Oil and Fats Company, Ltd.: *See*—
Mizuno, Mitsuo; Suginaka, Akinori; Fujii, Masahiko; and Akimoto, Shinichi, 4,368,185, Cl. 424-78.000.

Nippon Paint Co., Ltd.: *See*—
Ishikura, Shinichi; Ishii, Keizou; Kanda, Kazunori; and Mizuguchi, Ryuzo, 4,368,287, Cl. 524-513.000.

Nippon Shokubai Kagaku Kogyo Co., Ltd.: *See*—
Mitsuhata, Masashi; Watanabe, Fumio; and Kumazawa, Toshihiko, 4,368,144, Cl. 252-463.000.

Nippon Soken, Inc.: *See*—
Igashira, Toshihiko; Nomura, Ken; and Abe, Seiko, 4,368,380, Cl. 219-539.000.
Naito, Junichiro; Yamamoto, Shinichi; Suzuki, Zituo; and Asano, Mitsuru, 4,368,025, Cl. 425-462.000.

Nippon Steel Corporation: *See*—
Iida, Hiroshi; Ohara, Tetuya; and Tuji, Masakatu, 4,367,597, Cl. 34-155.000.

Nippon Telegraph & Telephone Public Corporation: *See*—
Ando, Hirokazu; Ohmori, Yasuo; Fukushima, Kazumasa; Iwama, Mitsuo; and Takahashi, Tsunematsu, 4,368,353, Cl. 178-30.000.
Kanbe, Hiroshi; and Hara, Elmer H., 4,368,385, Cl. 250-551.000.
Saito, Takashi, 4,368,491, Cl. 358-283.000.

Nippondenso Co., Ltd.: *See*—
Mizuno, Tiaki, 4,367,722, Cl. 123-644.000.
Totani, Shinzo; Kato, Takaaki; Mizuno, Yoshikazu; and Noda, Munetaka, 4,367,805, Cl. 180-179.000.

Nishida, Tatehiko: *See*—
Senda, Kenichi; Nishida, Tatehiko; and Nakagawa, Masao, 4,368,218, Cl. 427-222.000.

Nishiguchi, Yoichi: *See*—
Hata, Kunio; Oshima, Kihachiro; Kano, Isao; Matsukura, Norio; Umeda, Hiroaki; Matsui, Motoi; Ashida, Tetsushi; Nishiguchi, Yoichi; and Yasui, Nobushige, 4,368,081, Cl. 134-2.000.

Nishiguchi, Yuzuru, to Shinko Denshi Company Limited. Apparatus for counting articles using torque. 4,368,382, Cl. 235-92.0PK.

Nishikawa, Mamoru: *See*—
Nagata, Koji; Sudo, Kyuji; Nishikawa, Mamoru; and Tachibana, Kikuji, 4,368,219, Cl. 427-236.000.

Nishimura, Osamu: *See*—
Fujino, Masahiko; and Nishimura, Osamu, 4,368,150, Cl. 260-112.50R.

Nishio, Kazuaki: *See*—
Nakano, Tsunetomo; Nishio, Kazuaki; Watanabe, Hiroshi; and Yasuno, Hiroshi, 4,368,300, Cl. 525-531.000.

Nishiya, Yashinori: *See*—
Yui, Hiroshi; Kakizaki, Tetsuji; Nishiya, Yashinori; and Horie, Shinji, 4,368,280, Cl. 523-211.000.

Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Shigehara, Itaru; and Miyaji, Mikio, to Ishihara Sangyo Kaisha Ltd. Process for producing 1,3,5-trichlorobenzene. 4,368,340, Cl. 570-207.000.

Nishizuka, Makoto: *See*—
Okayama, Kiyoaki; and Nishizuka, Makoto, 4,368,298, Cl. 525-480.000.

Nissan Motor Co., Ltd.: *See*—
Ikeura, Kenji, 4,367,711, Cl. 123-417.000.
Ishikawa, Masao, 4,367,923, Cl. 350-345.000.
Kimura, Susumu; Ario, Hiroyosi; and Midorikawa, Minoru, 4,367,719, Cl. 123-568.000.
Maeda, Kouzou; and Kamijo, Ken, 4,367,851, Cl. 242-107.700.
Nakamura, Hiroyuki; Shikata, Makoto; and Ohgami, Masaaki, 4,367,708, Cl. 123-339.000.
Yasuhara, Seishi, 4,367,716, Cl. 123-478.000.

Nittel, Fritz; Langen, Hans; and Ranz, Erwin, to Agfa-Gevaert Aktiengesellschaft. Color photographic recording material containing an

emulsified, hydrophilic color-forming compound. 4,368,259, Cl. 430-546.000.
Nitto Electric Industrial Co., Ltd.: *See*—
Kakuhashi, Takeshi; and Miyake, Yasufumi, 4,368,252, Cl. 430-312.000.
Noda, Munetaka: *See*—
Totani, Shinzo; Kato, Takaaki; Mizuno, Yoshikazu; and Noda, Munetaka, 4,367,805, Cl. 180-179.000.
Noguchi, Kohji: *See*—
Yanagihara, Yuzo; Noguchi, Kohji; and Honda, Makoto, 4,368,275, Cl. 521-52.000.
Nomura, Ken: *See*—
Igashira, Toshihiko; Nomura, Ken; and Abe, Seiko, 4,368,380, Cl. 219-539.000.
Nonoyama, Takao: *See*—
Kitamura, Kazuhiko; Nonoyama, Takao; and Okumura, Atsuo, 4,368,366, Cl. 200-83.00Q.
Nordic Diving Salvage & Marine Contractors Ltd.: *See*—
McGregor, Robert I., 4,367,862, Cl. 254-231.000.
Northam, William D.: *See*—
Miller, Charles K.; and Northam, William D., 4,368,434, Cl. 329-50.000.
Northern Telecom Limited: *See*—
Sabri, Mohamed S., 4,368,487, Cl. 358-166.000.
Northwest Investments: *See*—
Ray, Dennis A., 4,367,717, Cl. 123-557.000.
Northwest Orthodontics, Inc.: *See*—
Armstrong, Maclay M., 4,368,039, Cl. 433-5.000.
Notoya, Yoshiaki: *See*—
Mizusawa, Akira; and Notoya, Yoshiaki, 4,367,995, Cl. 411-57.000.
Novametrix Medical Systems, Inc.: *See*—
Dali, Carmelo, 4,367,735, Cl. 128-207.180.
Novar Electronics Corporation: *See*—
Ott, James H.; and Rice, James S., 4,368,469, Cl. 343-100.0ST.
Nowakowski, Rafal: *See*—
Tomaszewski, Jerzy; Chmarzynski, Andrzej; and Nowakowski, Rafal, 4,367,985, Cl. 405-264.000.
Nozawa, Takamitsu: *See*—
Yoshino, Yataro; Tsukada, Takami; Saito, Tadao; and Nozawa, Takamitsu, 4,367,820, Cl. 215-12.00R.
Nussbaum, Joel H., to Standard Products Co., The. Molding laminate. 4,368,225, Cl. 428-31.000.
Obana, Satoshi: *See*—
Miura, Yoshiharu; Okazaki, Mitsuo; Komemushi, Setsuo; Sakata, Tenji; Shiroza, Satoshi; and Obana, Satoshi, 4,368,271, Cl. 435-247.000.
Obata, Sukiro; Murayama, Naohiro; and Fujii, Teruo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Vibration detector. 4,368,525, Cl. 367-165.000.
Oberg, Olov T. Silencer. 4,367,808, Cl. 181-272.000.
Oborotov, Vyacheslav D.: *See*—
Koshman, Vitaly I.; Petrichenko, Vladimir F.; Gnilitsky, Boris S.; Oborotov, Vyacheslav D.; Ubiiko, Alexandr M.; and Abara, Leonid P., 4,368,443, Cl. 335-138.000.
Occidental Oil Shale, Inc.: *See*—
Cha, Chang Y., 4,367,901, Cl. 299-2.000.
OCE-Nederland B.V.: *See*—
Stienstra, Jan B., 4,368,438, Cl. 331-14.000.
Oeth, James F., to Deere & Company. Heat activated fuel shut-off valve actuator. 4,367,705, Cl. 123-198.0DB.
Ofrex Group Limited: *See*—
Kenney, Alan G., 4,367,833, Cl. 227-8.000.
Ogasawara, Akira: *See*—
Shirasu, Hiroshi; Ogasawara, Akira; and Utagawa, Ken, 4,368,383, Cl. 250-201.000.
Ogasawara, Takahisa: *See*—
Endo, Takeshi; Mizutani, Kiyokazu; and Ogasawara, Takahisa, 4,368,314, Cl. 528-89.000.
Ogata, Yasuhiro; and Mutou, Norishige, to Kabushiki Kaisha Komatsu Seisakusho. Control system for hydraulic actuator. 4,367,624, Cl. 60-484.000.
Ogi, Koei: *See*—
Hayakawa, Masatoshi; Ogi, Koei; and Takahara, Michio, 4,367,574, Cl. 29-25.190.
Ogihara, Masato; and Tsubaki, Masamitsu, to Ricoh Company, Ltd. Development apparatus. 4,367,693, Cl. 118-674.000.
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Ogorek, Kurt: *See*—
Schwarting, Karl H.; Goris, Heinrich; Gunther, Roland; Holz, Joachim; and Ogorek, Kurt, 4,367,902, Cl. 299-42.000.
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Furihata, Makoto; Oguino, Masanori; and Sakata, Noboru, 4,368,354, Cl. 179-1.0GB.
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Nakamura, Hiroyuki; Shikata, Makoto; and Ohgami, Masaaki, 4,367,708, Cl. 123-339.000.
Ohmori, Yasuo: *See*—
Ando, Hirokazu; Ohmori, Yasuo; Fukushima, Kazumasa; Iwama, Mitsuo; and Takahashi, Tsunematsu, 4,368,353, Cl. 178-30.000.
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Kuge, Takao; and Ohta, Takeshi, 4,367,935, Cl. 354-25.000.
Ohta, Tokuya: *See*—
Uehara, Haruo; Matsumoto, Shigeyuki; Takatori, Yasushi; Ohta, Tokuya; and Matsufuji, Yohji, 4,368,476, Cl. 346-140.00R.
Ohtsuka, Shuichi, to Fuji Photo Film Co., Ltd. Xerographic copying machine. 4,367,942, Cl. 355-3.00R.
Oishi, Keiji: *See*—
Fujiwhara, Mitsuto; Matsuo, Syunji; Wada, Tsuneo; Abe, Naoto; Masukawa, Toyoaki; Iijima, Akio; and Oishi, Keiji, 4,368,258, Cl. 430-493.000.
Okabayashi, Ikuo: *See*—
Miyoshi, Hajime; Okabayashi, Ikuo; and Asanagi, Etsuo, 4,367,986, Cl. 405-266.000.
Okada, Ken: *See*—
Murakami, Sanpei; Kokeguchi, Sadao; Takahashi, Hiroshi; and Okada, Ken, 4,368,210, Cl. 426-557.000.
Okamura, Kazuhiko; Hirata, Shoji; Okumura, Yasushi; Fukagawa, Yasuo; Shimauchi, Yasutaka; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, to Sanraku-Ocean Co., Ltd. Antibiotics and derivatives thereof having β-lactamase inhibitory activity and production thereof. 4,368,203, Cl. 424-274.000.
Okamura, Kiyonobu: *See*—
Setsuie, Takashi; Mimura, Koji; and Okamura, Kiyonobu, 4,368,227, Cl. 428-91.000.
O'Kane, Joseph C.: *See*—
Wood, John F. B.; Platek, Stanley W.; O'Kane, Joseph C.; and Ackel, Gary P., 4,367,783, Cl. 164-452.000.
Okayama, Kiyoaki; and Nishizuka, Makoto. Process for producing novolak-type epoxy resin. 4,368,298, Cl. 525-480.000.
Okazaki, Mitsuo: *See*—
Miura, Yoshiharu; Okazaki, Mitsuo; Komemushi, Setsuo; Sakata, Tenji; Shiroza, Satoshi; and Obana, Satoshi, 4,368,271, Cl. 435-247.000.
OKI Electric Industry Co., Ltd.: *See*—
Ando, Hirokazu; Ohmori, Yasuo; Fukushima, Kazumasa; Iwama, Mitsuo; and Takahashi, Tsunematsu, 4,368,353, Cl. 178-30.000.
Okumura, Atsuo: *See*—
Kitamura, Kazuhiko; Nonoyama, Takao; and Okumura, Atsuo, 4,368,366, Cl. 200-83.00Q.
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Okamura, Kazuhiko; Hirata, Shoji; Okumura, Yasushi; Fukagawa, Yasuo; Shimauchi, Yasutaka; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,368,203, Cl. 424-274.000.
Okura, Zenichi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Automatic aperture presetting device. 4,367,939, Cl. 354-272.000.
Olin Corporation: *See*—
Breister, Sigmund; and Reiner, Joseph R., 4,368,073, Cl. 75-108.000.
Ford, James M., 4,368,109, Cl. 204-253.000.
Olschewski, Armin; Brandenstein, Manfred; and Walter, Lothar, to SKF Kugellagerfabriken GmbH. Rotary drill bit with conical rotary cutters. 4,367,904, Cl. 384-95.000.
Olympus Optical Co., Ltd.: *See*—
Fujii, Toru, 4,367,927, Cl. 350-426.000.
Kondo, Shiro, 4,367,856, Cl. 242-204.000.
Mukasa, Shizuo, 4,367,914, Cl. 350-530.000.
Ogiu, Hisao, 4,367,729, Cl. 128-6.000.
Saitou, Sinichi, 4,367,854, Cl. 242-198.000.
Shirako, Hideo, 4,368,497, Cl. 360-132.000.
Onitsuka, Hatsuki: *See*—
Miyake, Tetsuya; Takeda, Kunihiko; and Onitsuka, Hatsuki, 4,368,175, Cl. 423-7.000.
Ono, Shigetoshi; and Fujita, Shinsaku, to Fuji Photo Film Co., Ltd. Color diffusion transfer photographic light-sensitive sheet. 4,368,251, Cl. 430-223.000.
Onodera, Hirohumi. Drying apparatus. 4,367,596, Cl. 34-147.000.
Onozaki, Masaki: *See*—
Yanagiako, Hiroshi; Kanai, Toshio; Kogawa, Yoshio; Yoshida, Michihiro; Mashino, Zenji; Shimizu, Shin-ichi; Sugiya, Teruo; and Onozaki, Masaki, 4,368,060, Cl. 55-73.000.
Ontsuga, Hisao; Morinaga, Akio; and Morita, Akira, to Tokyo Gas Co. Ltd.; and Ashimori Industry Co., Ltd. Method for providing the inner surface of a pipe with a flexible tubular lining material through a liquid resin under pressure. 4,368,091, Cl. 156-287.000.
Orazalina, Kasken N.: *See*—
Abishev, Dzhantore N.; Buketov, Evnei A.; Shindauletova, Aigul T.; Baltynova, Nazymkul; Babskaya, Ida N.; Kobzhasov, Abubakir K.; Malyshev, Vitaly P.; Bauer, Ivan K.; Mukhamedinov, Murat M.; Kussinov, Temirkhan A.; Orazalina, Kasken N.; and Buketov, Eslambek A., 4,368,176, Cl. 423-25.000.
O'Rell, Dennis D.; and Lin, Nan J., to W. R. Grace & Co. Battery separator. 4,368,243, Cl. 429-147.000.
Orii, Masaru, to Kabushiki Kaisha Orii Jidoki Seisakusho. Feeding apparatus in pressing machine. 4,368,022, Cl. 425-343.000.
Ornstein, Murray. Ostomy bag. 4,367,742, Cl. 128-283.000.
Orthoefer, Frank T.: *See*—
Howard, Paulette A.; Lehnhardt, William F.; and Orthoefer, Frank T., 4,368,151, Cl. 260-123.500.

Oshima, Kihachiro: *See*—
Hata, Kunio; Oshima, Kihachiro; Kano, Isao; Matsukura, Norio; Umeda, Hiroaki; Matsui, Motoi; Ashida, Tetsushi; Nishiguchi, Yoichi; and Yasui, Nobushige, 4,368,081, Cl. 134-2.000.

Osman, Maged A., to BBC, Brown, Boveri & Company, Ltd. Anisotropic compounds with negative or positive DC-anisotropy and low optical anisotropy. 4,368,135, Cl. 252-299.630.

Otis Elevator Company: *See*—
Doane, John C.; Deric, J. Mark; and Roberts, Gary K., 4,367,810, Cl. 187-29.00R.

Otsuka, Kazuo; Narasaka, Shin; and Hasegawa, Shumpei, to Honda Giken Kogyo Kabushiki Kaisha. Air/fuel ratio control system for internal combustion engines, having air/fuel control function at engine deceleration. 4,367,713, Cl. 123-440.000.

Ott, James H.; and Rice, James S., to Novar Electronics Corporation. Traveling wave interferometry particularly for solar power satellites. 4,368,469, Cl. 343-100.0ST.

Otto, William L., Jr.; and Flynn, Edward G., to Aluminum Company of America. Method of producing a high temperature metal powder component. 4,368,074, Cl. 419-51.000.

Ottobre, Louis G.: *See*—
Hwang, Eddie Y.; Szabo, Andras I.; and Ottobre, Louis G., 4,368,520, Cl. 364-494.000.

Oughton, Richard W., to Du Pont Canada Inc. Control of residual solvent in proteinaceous materials. 4,368,152, Cl. 260-123.500.

Outboard Marine Corporation: *See*—
Lassanske, George G., 4,367,702, Cl. 123-182.000.
Strang, Charles D., 4,367,860, Cl. 248-641.000.
Williams, Dwight E., 4,367,881, Cl. 280-96.000.

Outokumpu Oy: *See*—
Hintikka, Vaino V. H., 4,368,117, Cl. 209-167.000.

Oven, Terence; and Higgs, Robert H., to Coal Industry (Patents) Limited. Excavating machines for tunneling with template fixed to boom. 4,367,898, Cl. 299-1.000.

Ovsyannikov, Vladimir I.: *See*—
Rubinshtein, Georgy M.; Yatsenko, Sergei P.; Diev, Valery N.; Zlokazova, Tatyana M.; Fomin, Eduard S.; Moskov, Ruslan N.; Grigorieva, Anastasia D.; Davydov, Ivan V.; Starkov, Evgeny N.; Ovsyannikov, Vladimir I.; Eremeev, Arnold F.; and Lavrenchuk, Vladimir N., 4,368,108, Cl. 204-43.00R.

Owens-Corning Fiberglas Corporation: *See*—
Charon, Clarence W., 4,368,164, Cl. 264-37.000.

Oy Wartsila Ab: *See*—
Uomala, Vilho, 4,367,766, Cl. 137-243.000.

Ozarski, Robert G.: *See*—
Kummler, Ralph H.; Leffert, Charles B.; Ozarski, Robert G.; Piccirelli, Robert A.; and Teichmann, Theodor, 4,368,169, Cl. 376-148.000.

Pace, James L., to Hotspur International Corporation, Inc. Apparatus for insuring the complete burning of fuel in a six cycle combustion engine. 4,367,700, Cl. 123-64.000.

Pacitti, William; and Ruble, Harold P., to La-Z-Boy Chair Company. Reclinable chair. 4,367,895, Cl. 297-85.000.

Palara, Sergio; and Tintori, Silvano, to SGS-ATES Componenti Elettronici S.p.A. Overload protection device for power output circuits. 4,368,436, Cl. 330-207.00P.

Palmer, Raymond J.; and Micheaux, Dominique, to McDonnell Douglas Corporation. Woven material and layered assembly thereof. 4,368,234, Cl. 428-245.000.

Panthout, Raymond. Attachment arrangement. 4,367,972, Cl. 403-387.000.

Paoletti, Ugo: *See*—
Angelini, Gianfranco; and Paoletti, Ugo, 4,368,078, Cl. 106-164.000.

Parise, Carl, to Parise & Sons, Inc. Double insulated wet/dry vacuum extraction machine. 4,367,565, Cl. 15-321.000.

Parise & Sons, Inc.: *See*—
Parise, Carl, 4,367,565, Cl. 15-321.000.

Park, Chung P., to Dow Chemical Company, The. Novel olefin polymer compositions and foamed articles prepared therefrom having improved elevated temperature dimensional stability. 4,368,276, Cl. 521-79.000.

Parker, Alan; Dickinson, Peter J.; Clough, Douglas O.; and Farnhill, William M. Piecing up a friction spinning apparatus. 4,367,623, Cl. 57-263.000.

Parker Manufacturing Company: *See*—
Ewig, John F., 4,367,779, Cl. 145-33.00A.

Passavant-Werke AG & Co. KG: *See*—
Murray, James D., 4,368,125, Cl. 210-403.000.

Pasternack, Adalbert; and Hinz, Claus-Dieter, to Dragerwerk Aktiengesellschaft. Airtight receptacle lock for emergency respirators. 4,367,822, Cl. 220-265.000.

Patel, Ramesh N.: *See*—
Hou, Ching-Tsang; Patel, Ramesh N.; and Laskin, Allen I., 4,368,267, Cl. 435-123.000.

Paulokat, Horst, to Messerschmitt-Boelkow-Blohm GmbH. Apparatus for the maintenance of refrigeration equipment. 4,367,637, Cl. 62-292.000.

Pearson, Ronald D. Wooden beam suspended ceiling assembly. 4,367,616, Cl. 52-664.000.

Pecoraro, Theresa A.: *See*—
Chianelli, Russell R.; Pecoraro, Theresa A.; and Dines, Martin B., 4,368,115, Cl. 208-215.000.

Peel, John L., to Rockwell International Corporation. SOS island edge passivation structure. 4,368,085, Cl. 148-33.300.

Peerless Metal Industries, Inc.: *See*—
Bitsky, Thomas C.; and Wilkus, Joseph R., 4,368,052, Cl. 493-96.000.

Peichl, Robert: *See*—
Dorr, Karl-Heinz; Grimm, Hugo; Sander, Ulrich; Peichl, Robert; and Maier, Franz, 4,368,183, Cl. 423-522.000.

Pennsylvania Crusher Corporation: *See*—
Kramer. Fred; and Gill, Gregg, 4,367,644, Cl. 72-389.000.

Pennsylvania Scale Company: *See*—
Bryan, James S., 4,367,801, Cl. 177-211.000.

Perelman, Robert D., to Andrew Corporation. Corrugated coaxial cable. 4,368,350, Cl. 174-102.00D.

Perkin-Elmer Corporation, The: *See*—
Steinberg, George N.; and Reinberg, Alan R., 4,368,092, Cl. 156-345.000.

Peroxid-Chemie GmbH: *See*—
Binder, Klaus; Edl, Wolfgang; and Twittenhoff, Hansjoachim, 4,368,311, Cl. 526-317.000.

Persaud, Ian K.; and Heinemann, Joseph B., to Timeplex, Inc. Multiprocessor system. 4,368,514, Cl. 364-200.000.

Personal Products Company: *See*—
James, Richard P., 4,368,323, Cl. 536-56.000.

Pesenacker, Manfred: *See*—
Hunger, Klaus; and Pesenacker, Manfred, 4,368,155, Cl. 260-157.000.

Petersen, Clifford W.: *See*—
Bednar, John M.; and Petersen, Clifford W., 4,367,794, Cl. 166-65.00R.

Petersen, Gerald A. Lock and key retainer for excavator tooth. 4,367,602, Cl. 37-142.00A.

Petersen, Robert A.: *See*—
Acker, John N.; and Petersen, Robert A., 4,367,866, Cl. 266-99.000.

Peterson, Robert R., to Barry Wright Corporation. Coupling. 4,368,050, Cl. 464-83.000.

Petrichenko, Vladimir F.: *See*—
Koshman, Vitaly I.; Petrichenko, Vladimir F.; Gnilitsky, Boris S.; Oborotov, Vyacheslav D.; Ubiiko, Alexandr M.; and Abara, Leonid P., 4,368,443, Cl. 335-138.000.

Petrolite Corporation: *See*—
Bellos, Thomas J., 4,368,137, Cl. 252-344.000.

Petrovich, Vojislav. Polyhydroxy fatty acids collector-frothers. 4,368,116, Cl. 209-166.000.

Pfaff Industriemaschinen GmbH: *See*—
Wauer, Gerd; Becker, Dietmar; and Schonthaler, Rubi, 4,367,891, Cl. 294-88.000.

Pfalzer, Lothar: *See*—
Bahr, Theodor; and Pfalzer, Lothar, 4,368,101, Cl. 162-4.000.

Pfander, Werner: *See*—
Herden, Werner; Hochenberger, Hans-Martin; Neu, Hans; Seidel, Hans-Joachim; Pfander, Werner; Gruner, Heiko; Zabler, Erich; Pilch, Claus-Dietrich; and Linn, Karl-Otto, 4,368,453, Cl. 338-25.000.

Pfeiler, Manfred, to Siemens Aktiengesellschaft. Diagnostic radiology apparatus for producing layer images. 4,368,536, Cl. 378-19.000.

Pfender, Georg, to MBK Maschinenbau GmbH. Machine for the manufacture of reinforcing bodies for precast concrete parts. 4,367,776, Cl. 140-112.000.

Pfizer Inc.: *See*—
Andrews, Glenn C., 4,368,330, Cl. 549-315.000.
Brennan, Thomas M.; Brannegan, Daniel P.; Kuhla, Donald E.; and Weeks, Paul D., 4,368,331, Cl. 549-417.000.

Phillips Petroleum Company: *See*—
Crowley, Ralph P.; and Pope, Max D., 4,368,058, Cl. 55-21.000.
Eastman, Alan D., 4,368,346, Cl. 585-658.000.
Gragson, James T., 4,368,130, Cl. 252-33.400.
Hawley, Gil R.; and McDaniel, Max P., 4,368,301, Cl. 526-100.000.
Kolts, John H., 4,368,344, Cl. 585-624.000.
Kukes, Semyon, 4,368,141, Cl. 252-439.000.
McDaniel, Max P., 4,368,303, Cl. 526-106.000.
Mills, King L.; and Cheng, Paul J., 4,368,182, Cl. 423-450.000.
Sherk, Fred T.; and Hammer, Harry B., 4,368,321, Cl. 528-388.000.
Siefkin, James M.; and Boesiger, Dwight D., 4,368,111, Cl. 208-11.0LE.

Piccirelli, Robert A.: *See*—
Kummler, Ralph H.; Leffert, Charles B.; Ozarski, Robert G.; Piccirelli, Robert A.; and Teichmann, Theodor, 4,368,169, Cl. 376-148.000.

Pierce, Sammy M.; and Wayman, Morris. Diesel fuel by fermentation of wastes. 4,368,056, Cl. 44-53.000.

Pilatzki, Bernd. Steering device with dished impact plate for automotive vehicles. 4,368,454, Cl. 340-22.000.

Pilch, Claus-Dietrich: *See*—
Herden, Werner; Hochenberger, Hans-Martin; Neu, Hans; Seidel, Hans-Joachim; Pfander, Werner; Gruner, Heiko; Zabler, Erich; Pilch, Claus-Dietrich; and Linn, Karl-Otto, 4,368,453, Cl. 338-25.000.

Pinnow, Douglas A., to Times Fiber Communications, Inc. Plastic clad optical fibers. 4,367,918, Cl. 350-96.300.

Pinson Energy Corporation: *See*—
Drees, Herman M., 4,368,392, Cl. 290-54.000.

Pioneer Electronic Corporation: *See*—
Ichikawa, Toshihito, 4,368,355, Cl. 179-1.0GS.
Kamimura, Teturo; Komatsubara, Masahiro; Ando, Shizuo; and Inanaga, Takuzi, 4,368,494, Cl. 360-96.500.

Pitney Bowes, Inc.: *See*—
Clark, John L., 4,367,676, Cl. 101-91.000.

Platek, Stanley W.: *See*—
Wood, John F. B.; Platek, Stanley W.; O'Kane, Joseph C.; and Ackel, Gary P., 4,367,783, Cl. 164-452.000.

Platoshkina, Maria G.: *See*—
Dobrokhtova, Marina K.; Evseev, Bladimir A.; Artsis, Evgeny S.; Eisenshtein, Gennady A.; Cheburashko, Boris P.; Platoshkina, Maria G.; Nefedov, Vladimir P.; and Valyshkina, Ljudmila I., 4,368,318, Cl. 528-326.000.

Plessey Company Limited, The: *See*—
Chopping, Geoffrey, 4,368,531, Cl. 370-100.000.

Poels, Philip, to Strippers Paint Removal Services Ltd. Paint stripping method. 4,368,082, Cl. 134-4.000.

Pollerspock, Kurt, to Siemens Aktiengesellschaft. Pressure-resistant housing having a rectangular lid. 4,367,825, Cl. 220-346.000.

Pollock, Mark W.; and Seubert, George A., Jr., to Argus Chemical Corporation. Nondusting free-flowing solid particulate polyvalent metal carboxylic acid salt compositions and process for preparing the same. 4,368,139, Cl. 252-384.000.

Polygram GmbH: *See*—
Ahrens, Harald; and Schulz, Dieter, 4,367,952, Cl. 356-400.000.

Polysar International, S.A.: *See*—
Ceska, Gary W.; and Burkhart, Gerald W., 4,368,077, Cl. 106-96.000.

Pope, Max D.: *See*—
Crowley, Ralph P.; and Pope, Max D., 4,368,058, Cl. 55-21.000.

Porat, Reuven; and Nessel, Elizer, to Iscar Ltd. Cutting insert. 4,367,990, Cl. 407-114.000.

Porter, Glendon R.: *See*—
Chung, Li-Jin W.; Moore, Ernest P.; Porter, Glendon R.; and Rizzo, Joseph F., 4,368,361, Cl. 179-170.200.
Chung, Li-Jin W.; Moore, Ernest P.; Porter, Glendon R.; and Rizzo, Joseph F., 4,368,362, Cl. 179-170.200.

Porter, Stephen T., II; and Gaiser, Paul G., to Marriott Corporation. Menu board. 4,367,604, Cl. 40-564.000.

Portz, Willi: *See*—
Braun, Albert; Portz, Willi; Strauss, Georg; and Delhey, Hans-Martin, 4,368,071, Cl. 75-0.50R.

Poulsen, Finn; and Samuelsen, Peter, to Coloplast A/S. Skin barrier. 4,367,732, Cl. 128-156.000.

Powell, Frederick J.: *See*—
Hinton, Jonathan W.; Powell, Frederick J.; and Matz, Robert W., 4,368,166, Cl. 264-61.000.

Power Technologies, Inc.: *See*—
DeMello, F. Paul; and Ringlee, Robert J., 4,368,418, Cl. 323-201.000.

PPG Industries, Inc.: *See*—
Frank, Robert G.; 4,368,065, Cl. 65-114.000.
Leatherman, Ivan R., 4,368,310, Cl. 526-314.000.
Valimont, James L.; and Kelly, Joseph D., 4,368,087, Cl. 156-102.000.

Praitoni, Alberto; and Spaccarotella, Antonio, to Centro Sperimentale Metallurgico S.p.A. Method for adding cooling powders to steel during continuous casting. 4,367,784, Cl. 164-473.000.

Precision Valve Corporation: *See*—
Bayer, Christian, 4,367,847, Cl. 239-337.000.

Preformed Line Marine, Inc.: *See*—
Albert, Frank, Jr., 4,367,967, Cl. 403-41.000.

Pren Elektrofeinmecahnische Wereke Jakob Preh Nachf. GmbH & Co.: *See*—
Bauer, Karl-Heinz; Eckert, Gerold; and Wolf, Reinhold, 4,368,441, Cl. 334-15.000.

Presba, Keneth E.: *See*—
Winter, Craig R.; Bird, Stanley M., Sr.; and Presba, Keneth E., 4,367,590, Cl. 33-137.00R.

Presby, Herman M., to Bell Telephone Laboratories, Incorporated. Method of fabricating a tapered torch nozzle. 4,368,063, Cl. 65-42.000.

Pretini, Gisberto. Systems for utilizing the energy of a moving air current. 4,367,627, Cl. 60-641.120.

Preuss, Bernhard; and Koziolek, Werner, to Siemens Aktiengesellschaft. Low-voltage protective circuit breaker with locking lever. 4,368,444, Cl. 335-166.000.

Procter & Gamble Company, The: *See*—
Crawford, Robert J., 4,368,140, Cl. 252-426.000.
Hollenbach, Edward J.; and Howard, Norman B., 4,368,213, Cl. 426-590.000.

Produits Chimiques Ugine Kuhlmann: *See*—
Tournut, Claude, 4,368,217, Cl. 427-181.000.

Prosser, Barbara: *See*—
Liu, Chao-Min; Prosser, Barbara; and Westley, John, 4,368,265, Cl. 435-75.000.

Purdue Research Foundation: *See*—
Gong, Cheng-Shung, 4,368,268, Cl. 435-161.000.

Puskas, Ferenc, to Chemokomplex Vegyipari Gep-es Berendezes Export-Import Vallalat. Process for the utilization in the ceramics industry of red mud from alumina plants. 4,368,273, Cl. 501-155.000.

Pyves, Richard R.; and Jeffery, James W., to General Foods Inc. Process for producing a spray-dried agglomerated soluble coffee product. 4,368,100, Cl. 159-48.100.

Quilliam, John E. H., to Sigma Electronics Limited; and University of Surrey, The. Graphic display area classification. 4,368,463, Cl. 340-744.000.

Quirin, Michel: *See*—
Aron, Jerome; Quirin, Michel; and Wattron, Albert, 4,367,622, Cl. 56-364.000.

Radtke, Richard L.: *See*—
Underwood, Arthur A.; and Radtke, Richard L., 4,367,692, Cl. 118-415.000.

Ramer, Paul C., to Alpine Research, Inc. Ski binding. 4,367,885, Cl. 280-614.000.

Ramquist, Amos H. Combined drive and brake mechanism for a wheeled vehicle carriage. 4,367,806, Cl. 180-308.000.

Ranz, Erwin: *See*—
Nittel, Fritz; Langen, Hans; and Ranz, Erwin, 4,368,259, Cl. 430-546.000.

Rapp, William J., to Gardco Manufacturing, Inc. Apparatus for mounting a luminaire to a ceiling. 4,368,506, Cl. 362-147.000.

Rasmussen, Ole-Bendt. Apparatus for film extrusion comprising rotary die parts. 4,368,017, Cl. 425-131.100.

Rasovich, Ivan: *See*—
Bernard, Vincent R.; Ellis, R. James; and Rasovich, Ivan, 4,367,630, Cl. 62-63.000.

Rasshofer, Werner; Grogler, Gerhard; and Findeisen, Kurt, to Bayer Aktiengesellschaft. Process for the production of polyurethanes using cyclic N-hydroxyalkyl-substituted compounds containing amidine groups as catalysts. 4,368,278, Cl. 521-115.000.

Rauning, Hans, to Tetra Pak International AB. Packing container for pressurized contents. 4,367,842, Cl. 229-55.000.

Ravagnan, Giancarlo. System for separating and collecting oily materials from water expanses. 4,368,122, Cl. 210-242.300.

Raver, Clarence L., to Thornhill-Craver Company. Locking device for connectors and closures. 4,367,823, Cl. 220-316.000.

Ray, Dennis A., to Northwest Investments. Fuel treating apparatus for engines. 4,367,717, Cl. 123-557.000.

RCA Corporation: *See*—
Carlson, David J.; and Lehmann, William L., 4,368,540, Cl. 455-180.000.
Chamberlain, James W.; and Goldschmidt, Arthur M., 4,368,492, Cl. 360-70.000.
Fletcher, James D., 4,368,370, Cl. 200-329.000.
Huggett, Paul G.; and Frick, Klaus, 4,368,099, Cl. 156-628.000.
Liu, Frank C., 4,368,483, Cl. 358-36.000.
Shisler, Robert W., 4,368,445, Cl. 335-210.000.
Siegel, Stefan A., 4,368,064, Cl. 65-105.000.

Redl, Philip J. Fire guarded blowout preventer hose. 4,367,889, Cl. 285-149.000.

Rees, Herbert; and Fritzsche, Klaus B., to Husky Injection Molding Systems Inc. Transporter for injection-molded parts or inserts therefor. 4,368,018, Cl. 425-138.000.

Reese, Eckart: *See*—
Egert, Karl-Heinz; Wank, Joachim; and Reese, Eckart, 4,368,231, Cl. 428-220.000.

Regie Nationale des Usines Renault: *See*—
Deleris, Robert, 4,367,710, Cl. 123-416.000.

Reil, Wilhelm, to Tetra Pak Developpement S.A. Liquid packaging container with pouring spout and air inlet. 4,367,828, Cl. 222-528.000.

Reinberg, Alan R.: *See*—
Steinberg, George N.; and Reinberg, Alan R., 4,368,092, Cl. 156-345.000.

Reiner, Joseph R.: *See*—
Breister, Sigmund; and Reiner, Joseph R., 4,368,073, Cl. 75-108.000.

Reinhardt, Helmut: *See*—
Gratzfeld, Everhard; Clausen, Eva; Reinhardt, Helmut; and Schaefer, Hans, 4,368,075, Cl. 106-20.000.

Rentzea, Costin; Feuerherd, Karl-Heinz; Zeeh, Bernd; and Jung, Johann, to BASF Aktiengesellschaft. 1,3-Dioxan-5-yl-alkenyltriazoles, their preparation, their uses in regulating plant growth, and regulators containing these compounds. 4,368,066, Cl. 71-76.000.

Republic Steel Corporation: *See*—
Blair, Matthew J.; and Keifer, George E., Jr., 4,367,865, Cl. 266-44.000.

Research Corporation: *See*—
Bucovaz, Edael T.; Whybrew, Walter D.; and Morrison, John C., 4,368,262, Cl. 435-23.000.
Shefter, Eli; Smith, Francis X.; and Gardner, Mark J., 4,368,197, Cl. 424-245.000.

Resuggan, Harold F., to Webley and Scott Limited. Air gun with piston fully cocked in plurality of stages. 4,367,723, Cl. 124-67.000.

Reuter, Anthony W., to Wavetek Indiana, Inc. Wide frequency range signal generator including plural phase locked loops. 4,368,437, Cl. 331-2.000.

Reuter, Gerhard: *See*—
Schnabel, Wolfram; Reuter, Gerhard; and Lausch, Herbert, 4,368,177, Cl. 423-175.000.

Revici, Emanuel. Method for treating alcoholism and eliminating and preventing alcohol intoxication. 4,368,206, Cl. 424-312.000.

Reynolds, Edward J. Flashlight. 4,368,507, Cl. 362-200.000.

Reynolds, Kenneth: *See*—
Katritzky, Alan R.; Graphakos, Basil J.; Lhommet, Girard A. F.; and Reynolds, Kenneth, 4,368,329, Cl. 549-13.000.

Rhodes, William E., III: *See*—
Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, 4,368,207, Cl. 424-343.000.

Rice, James S.: *See*—
Ott, James H.; and Rice, James S., 4,368,469, Cl. 343-100.0ST.

Rice, Kenner C. Short total synthesis of dihydrothebainone, dihydrocodeinone, and nordihydroccodeinone. 4,368,326, Cl. 546-45.000.

Richmond, James M., to Akzona Incorporated. Fabric softening compounds and method. 4,368,127, Cl. 252-8.800.

Richter Gedeon Vegyeszeti Gyar R.T.: *See*—
Boor nee Mezei, Anna; Toth, Jozsef; Szea, Tamas; Gabor, Laszlo; Major nee Fastner, Piroska; and Holly, Sandor, 4,368,160, Cl. 260-397.400.

Richter, Hans-Hugo; and Trumper, Fritz-Dieter, to Uhde GmbH. Device for measuring solids in a moving stream. 4,367,653, Cl. 73-861.210.

Ricoh Company, Ltd.: *See*—
Ogihara, Masato; and Tsubaki, Masamitsu, 4,367,693, Cl. 118-674.000.

Riederauer, Szilard: *See*—
Kovacs, Laszlo; Moger nee Eremineva, Galina; Gal, Dezso; Hajdu, Peter; Lukacs, Julia; Kroo, Erik; Nemes, Istvan; Nemeth, Andras; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Riederauer, Szilard; and Szepvolgyi, Janos, 4,368,333, Cl. 562-407.000.

Rilly, Gerard: *See*—
Sivanesan, Appukuddy; Geiger, Erich; and Rilly, Gerard, 4,368,409, Cl. 315-411.000.

Rines, Glen A.: *See*—
Dale, John C.; Rines, Glen A.; and Fuller, Harrison W., 4,368,430, Cl. 324-244.000.

Ringlee, Robert J.: *See*—
DeMello, F. Paul; and Ringlee, Robert J., 4,368,418, Cl. 323-201.000.

Rizzo, Joseph F.: *See*—
Chung, Li-Jin W.; Moore, Ernest P.; Porter, Glendon R.; and Rizzo, Joseph F., 4,368,361, Cl. 179-170.200.
Chung, Li-Jin W.; Moore, Ernest P.; Porter, Glendon R.; and Rizzo, Joseph F., 4,368,362, Cl. 179-170.200.

Robert, Andre: *See*—
Rouge, Jean; and Robert, Andre, 4,367,649, Cl. 73-645.000.

Robert Bosch GmbH: *See*—
Herden, Werner; Hochenberger, Hans-Martin; Neu, Hans; Seidel, Hans-Joachim; Pfander, Werner; Gruner, Heiko; Zabler, Erich; Pilch, Claus-Dietrich; and Linn, Karl-Otto, 4,368,453, Cl. 338-25.000.

Roberts, Gary K.: *See*—
Doane, John C.; Deric, J. Mark; and Roberts, Gary K., 4,367,810, Cl. 187-29.00R.

Rochelt, Gunter. Oscillating member for transforming a rotary motion into a reciprocating motion. 4,367,658, Cl. 74-40.000.

Rock, Erich; and Blum, Herbert, to Julius Blum Gesellschaft m.b.H. Mounting plate for a furniture hinge. 4,367,566, Cl. 16-236.000.

Rock, Erich, to Julius Blum Gesellschaft m.b.H. Pull-out guide for drawers. 4,367,906, Cl. 312-330.00R.

Rockwell International Corporation: *See*—
Manasevit, Harold M., 4,368,098, Cl. 156-606.000.
Peel, John L., 4,368,085, Cl. 148-33.300.

Rockwell-Rimoldi, S.p.A.: *See*—
Sanvito, Roberto, 4,367,687, Cl. 112-217.100.

Roder, Albert: *See*—
Klose, Sigmar; Roder, Albert; and Schneider, Walter, 4,368,261, Cl. 435-15.000.

Roderfeld, Heinrich; and Kampwerth, August, to Claas OHG. Vibration-free self-propelling harvester thresher. 4,367,756, Cl. 130-23.000.

Rohr, Franz-Josef; and Krapf, Rudolf, to Brown, Boveri & Cie Aktiengesellschaft. Electrochemical measuring device for determining the oxygen content in gases. 4,368,431, Cl. 324-464.000.

Romanelli, Pat: *See*—
Kozam, George; and Romanelli, Pat, 4,367,737, Cl. 128-215.000.

Rosenstock, Guenter: *See*—
Heinzl, Joachim; Kattner, Erich; and Rosenstock, Guenter, 4,368,477, Cl. 346-140.00R.

Rosenweig, Ronald E., to Exxon Research and Engineering Co. Composition for use in a magnetically fluidized bed. 4,368,131, Cl. 252-62.550.

Roster, Theodore J.: *See*—
Sergev, Sergius S.; and Roster, Theodore J., 4,367,845, Cl. 236-21.00R.

Roth, Adrian W.; and Wuthrich, Hans-Rudolf, to Sprecher & Schuh AG. Gas-blast switch. 4,368,367, Cl. 200-148.00A.

Rouge, Jean; and Robert, Andre, to Thomson-CSF. Acoustic polarimeter. 4,367,649, Cl. 73-645.000.

Roup, Walter G. Dental simulator and method for recording jaw movements. 4,368,041, Cl. 433-69.000.

Rubinshtein, Georgy M.; Yatsenko, Sergei P.; Diev, Valery N.; Zlokazova, Tatyana M.; Fomin, Eduard S.; Moskov, Ruslan N.; Grigorieva, Anastasia D.; Davydov, Ivan V.; Starkov, Evgeny N.; Ovsyannikov, Vladimir I.; Eremeev, Arnold F.; and Lavrenchuk, Vladimir N. Process for electrolytic recovery of gallium or gallium and vanadium from alkaline liquors resulting from alumina production. 4,368,108, Cl. 204-43.00R.

Ruble, Harold P.: *See*—
Pacitti, William; and Ruble, Harold P., 4,367,895, Cl. 297-85.000.

Ruf, Wolfgang: *See*—
Stemme, Otto; Wagensonner, Eduard; and Ruf, Wolfgang, 4,368,489, Cl. 358-208.000.

Rugg, Barry A.; and Brenner, Walter, to New York University. Apparatus for chemical conversion of materials and particularly the conversion of cellulose waste to glucose. 4,368,079, Cl. 127-1.000.

Ruhrchemie Aktiengesellschaft: *See*—
Frohning, Dieter; and Horn, Gerhard, 4,368,142, Cl. 252-455.00R.

Russenberger, Victor. Electrical switch with a vertical push-piece. 4,368,368, Cl. 200-153.00J.

Rybicki, Robert C.: *See*—
Ferris, Donald L.; and Rybicki, Robert C., 4,368,006, Cl. 416-140.000.

Ryckman, George, deceased (by Ryckman, Margaret V., executrix), to Service (Engineers) Limited. Oval dish forming method and machine. 4,368,021, Cl. 425-265.000.

Ryckman, Margaret V., executrix: *See*—
Ryckman, George, deceased, 4,368,021, Cl. 425-265.000.

Ryobi, Ltd.: *See*—
Ishii, Koji; and Goto, Taro, 4,367,679, Cl. 101-410.000.

Sabol, Linda M. Horse hoof cleaning tool. 4,367,798, Cl. 168-45.000.

Sabri, Mohamed S., to Northern Telecom Limited. Method and apparatus for mitigation of degradations caused by spatio-temporal filtering of video signals. 4,368,487, Cl. 358-166.000.

Sahara, Masayoshi, to Minolta Camera Kabushiki Kaisha. Audible indication device for cameras. 4,367,933, Cl. 354-23.00D.

Saito, Eiichi: *See*—
Iwamoto, Seigo; and Saito, Eiichi, 4,368,161, Cl. 260-448.00R.

Saito, Syuichiro: *See*—
Yoshida, Syozo; and Saito, Syuichiro, 4,367,938, Cl. 354-234.000.

Saito, Tadao: *See*—
Yoshino, Yataro; Tsukada, Takami; Saito, Tadao; and Nozawa, Takamitsu, 4,367,820, Cl. 215-12.00R.

Saito, Takashi, to Nippon Telegraph & Telephone Public Corporation. Driving equipment for multi-gradation level reproduction. 4,368,491, Cl. 358-283.000.

Saito, Toshihiko: *See*—
Araya, Hiroyuki; Saito, Toshihiko; Kumazawa, Katsuyoshi; Sakamoto, Moriyoshi; and Koyama, Mitoshi, 4,368,032, Cl. 431-118.000.

Saito, Yasuhisa: *See*—
Watanabe, Katsuyoshi; Andoh, Makoto; Saito, Yasuhisa; Maeda, Yasuteru; and Fukuyama, Yoshiya, 4,368,299, Cl. 525-481.000.

Saitou, Sinichi, to Olympus Optical Company Limited. Tape cassette. 4,367,854, Cl. 242-198.000.

Sakaguchi, Hirofumi; Matsumoto, Ken-ichi; and Masuda, Keiji, to Konishiroku Photo Industry Co., Ltd. Heated roller type fixing apparatus. 4,367,690, Cl. 118-60.000.

Sakai, Akeo: *See*—
Kato, Hiroaki; Hamana, Junji; Sakai, Akeo; Kawakami, Yoshio; Goto, Atsushi; and Amano, Saichiro, 4,368,496, Cl. 360-110.000.

Sakakibara, Naoji, to Aisin Seiki Kabushiki Kaisha. Vehicle constant speed driving apparatus. 4,367,804, Cl. 180-176.000.

Sakamoto, Moriyoshi: *See*—
Araya, Hiroyuki; Saito, Toshihiko; Kumazawa, Katsuyoshi; Sakamoto, Moriyoshi; and Koyama, Mitoshi, 4,368,032, Cl. 431-118.000.

Sakamoto, Takashi, to Dainippon Screen Seizo Kabushiki Kaisha. Picture scanning method at high speed. 4,368,488, Cl. 358-208.000.

Sakano, Akio; Shikakura, Kunio; Tamaru, Hideshi; and Yoshida, Kimiyoshi, to Sony Corporation. Pickup cartridge. 4,368,528, Cl. 369-136.000.

Sakata, Kazuhiro: *See*—
Yoneda, Kenji; Sakata, Kazuhiro; Yuminaka, Takeo; Nakazato, Masao; Kurihara, Tomiaki; Kuzunuki, Soshiro; and Katayama, Yasunori, 4,367,811, Cl. 187-29.00R.

Sakata, Noboru: *See*—
Furihata, Makoto; Oguino, Masanori; and Sakata, Noboru, 4,368,354, Cl. 179-1.0GB.

Sakata, Tenji: *See*—
Miura, Yoshiharu; Okazaki, Mitsuo; Komemushi, Setsuo; Sakata, Tenji; Shiroza, Satoshi; and Obana, Satoshi, 4,368,271, Cl. 435-247.000.

Sakuma, Kiyoshi; Nakazima, Isamu; and Sugiyama, Tetuo, to Mitsubishi Denki Kabushiki Kaisha. Air conditioner. 4,367,636, Cl. 62-262.000.

Samuelsen, Peter: *See*—
Poulsen, Finn; and Samuelsen, Peter, 4,367,732, Cl. 128-156.000.

Sander, Ulrich: *See*—
Dorr, Karl-Heinz; Grimm, Hugo; Sander, Ulrich; Peichl, Robert; and Maier, Franz, 4,368,183, Cl. 423-522.000.

Sanders Associates, Inc.: *See*—
Dale, John C.; Rines, Glen A.; and Fuller, Harrison W., 4,368,430, Cl. 324-244.000.

Sanraku-Ocean Co., Ltd.: *See*—
Okamura, Kazuhiko; Hirata, Shoji; Okumura, Yasushi; Fukagawa, Yasuo; Shimauchi, Yasutaka; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,368,203, Cl. 424-274.000.

Santacesaria, Elio: *See*—
Carra, Sergio; Santacesaria, Elio; Morbidelli, Massimo; Codignola, Franco; and DiFiore, Lucio, 4,368,347, Cl. 585-828.000.

Sanvito, Roberto, to Rockwell-Rimoldi, S.p.A. Worktable for sewing machines. 4,367,687, Cl. 112-217.100.

Sapora, Robert. Educational apparatus and method for control of deaf individuals in a mixed teaching environment. 4,368,459, Cl. 340-407.000.

Sarkisov, Arutjun K.; and Nikiforov, Lev I. Vaccine and method prophylaxis and treatment of trichophytosis caused by pathogenic organism trichophyton mentagrophtyes and method for preparing same. 4,368,191, Cl. 424-88.000.

Saruwatari, Koichi: *See*—
Maejima, Masatsugu; Saruwatari, Koichi; and Isawa, Kazuo, 4,368,107, Cl. 204-24.000.

Sasaki, Isamu: *See*—
Torii, Michihiro; Hirukawa, Kohei; Tsuchiya, Ryoji; Urata, Hiroshi; Sasaki, Isamu; and Esaki, Kunio, 4,368,402, Cl. 310-367.000.

Sasaki, Isao: *See*—
Kishida, Kazuo; Sasaki, Isao; and Mori, Hiroshi, 4,368,283, Cl. 524-109.000.
Sasaki, Osamu: *See*—
Usagawa, Yasushi; Fujimatsu, Wataru; Sasaki, Osamu; and Matsuura, Katsumi, 4,368,257, Cl. 430-384.000.
Sasaki, Takao: *See*—
Imazeki, Ryoji; Yamazaki, Etsuo; and Sasaki, Takao, 4,368,433, Cl. 328-30.000.
Satake Engineering Co., Ltd.: *See*—
Satake, Toshihiko, 4,367,817, Cl. 209-580.000.
Satake, Toshihiko, to Satake Engineering Co., Ltd. Color discriminating machine. 4,367,817, Cl. 209-580.000.
Sato, Akihiro; Uwai, Toshihiro; Hanari, Tohru; Kikuta, Kazutsune; and Miyajima, Masazumi, to Chisso Corporation. Process for producing α-olefin polymers. 4,368,304, Cl. 526-114.000.
Sato, Akira; Niiya, Masamichi; Takeuchi, Masayuki; Fukai, Masaru; and Shintani, Sotokichi, to Kokusai Denshin Denwa Kabushiki Kaisha. Adaptive control type echo suppressor. 4,368,360, Cl. 179-170.200.
Sato, Hiroshi; Ogoshi, Shohei; and Inoue, Goro, to Ajinomoto Company Incorporated. Nutrition composition for pediatrics. 4,368,204, Cl. 424-274.000.
Sato, Kozi; and Kaneko, Tadahiro, to Toshiba Electric Equipment Corporation. Task lighting apparatus. 4,368,504, Cl. 362-33.000.
Sato, Susumu: *See*—
Irie, Toshio; Sato, Susumu; and Hashimoto, Osamu, 4,368,084, Cl. 148-12.00C.
Sato, Toshio: *See*—
Harigae, Shunji; Yoshida, Tomio; Nakata, Yoshinobu; Nagashima, Michiyoshi; and Sato, Toshio, 4,368,526, Cl. 369-45.000.
Sattlegger, Hans: *See*—
Alberts, Heinrich; Friemann, Hans; Moretto, Hans-Heinrich; and Sattlegger, Hans, 4,368,290, Cl. 525-29.000.
Saunders, William T., to National Steel Corporation. Tab opener end closure assembly method. 4,367,996, Cl. 413-14.000.
Sawamua, Mitsuharu; and Ito, Susumu, to Canon Kabushiki Kaisha. Low polarization beam splitter. 4,367,921, Cl. 350-164.000.
Schaaf, Cecil; and Schaaf, Craig. Device for preventing beach erosion. 4,367,978, Cl. 405-30.000.
Schaaf, Cecil F.; and Schaaf, Craig R. Shore erosion prevention modules. 4,367,977, Cl. 405-25.000.
Schaaf, Craig: *See*—
Schaaf, Cecil; and Schaaf, Craig, 4,367,978, Cl. 405-30.000.
Schaaf, Craig R.: *See*—
Schaaf, Cecil F.; and Schaaf, Craig R., 4,367,977, Cl. 405-25.000.
Schaefer, Hans: *See*—
Gratzfeld, Everhard; Clausen, Eva; Reinhardt, Helmut; and Schaefer, Hans, 4,368,075, Cl. 106-20.000.
Schaufler, Hans-Peter: *See*—
Aldinger, Werner; Anzt, Helmut; Morlock, Gerhard; and Schaufler, Hans-Peter, 4,368,320, Cl. 528-355.000.
Schelhorn, Gerhard: *See*—
Becker, Herbert; Schelhorn, Gerhard; and Sunkel, Manfred, 4,367,660, Cl. 74-625.000.
Scheying, Heinz, to Daimler-Benz A.G. Fuel injection pump for air-compressing fuel injected internal combustion engines. 4,367,706, Cl. 123-300.000.
Schiefer, William E. Articulable training device for racquet sports and the like. 4,367,871, Cl. 273-29.00A.
Schirk, Gunter: *See*—
Kohlbauer, Walter; and Schirk, Gunter, 4,368,010, Cl. 417-271.000.
Schlapman, William J., to J. I. Case Company. Snow caster having ring gear and spur gear drive means. 4,367,603, Cl. 37-251.000.
Schlaudroff, Leo M.: *See*—
Arnold, Richard B.; and Schlaudroff, Leo M., 4,367,774, Cl. 140-1.000.
Schlauer, Johann: *See*—
Doerges, Alexander; Kriebel, Manfred; and Schlauer, Johann, 4,368,059, Cl. 55-73.000.
Schlick, Erich: *See*—
Ganz, Alfred; Hartwig, Karl; Jung, Christoph; Schnall, Gunther; Schlick, Erich; and Vossnacke, Jurgen, 4,367,954, Cl. 366-156.000.
Schlossberg, Steven: *See*—
Legendre, Robert; and Schlossberg, Steven, 4,367,738, Cl. 128-218.0PA.
Schmidt, Gerhard: *See*—
Bluml, Hans; and Schmidt, Gerhard, 4,367,655, Cl. 73-862.540.
Schmidt, Glenn H. Golf club head. 4,367,878, Cl. 273-175.000.
Schnabel, Wolfram; Reuter, Gerhard; and Lausch, Herbert, to Metallgesellschaft Aktiengesellschaft. Process of producing quicklime by calcining in a rotary kiln. 4,368,177, Cl. 423-175.000.
Schnall, Gunther: *See*—
Ganz, Alfred; Hartwig, Karl; Jung, Christoph; Schnall, Gunther; Schlick, Erich; and Vossnacke, Jurgen, 4,367,954, Cl. 366-156.000.
Schnapper, Christoph; and Intichar, Lutz, to Siemens Aktiengesellschaft. Arrangement for deep cooling a field winding in the rotor of an electric machine. 4,368,397, Cl. 310-52.000.
Schneider, Walter: *See*—
Klose, Sigmar; Roder, Albert; and Schneider, Walter, 4,368,261, Cl. 435-15.000.
Schnitzer, Heinrich; and Mauermann, Volker, to Mannesmann Aktiengesellschaft. Cooling support elements for metallurgical furnace. 4,367,867, Cl. 266-190.000.
Schoffmann, Ernst; and Czernuch, Alexander, to Bruderhaus Maschinen GmbH. Apparatus for regulating pulp density. 4,368,102, Cl. 162-258.000.
Schonthaler, Rubi: *See*—
Wauer, Gerd; Becker, Dietmar; and Schonthaler, Rubi, 4,367,991, Cl. 294-88.000.
Schrader, Gustav E., to TRW Inc. Method and apparatus for use in molding articles. 4,367,782, Cl. 164-137.000.
Schranz, John L., to McCormick & Company, Inc. Water-soluble curcumin complex. 4,368,208, Cl. 426-250.000.
Schroder, Heinrich: *See*—
Hilgner, Reinhard; Utz, Wolfgang; and Schroder, Heinrich, 4,367,650, Cl. 73-649.000.
Schulke, Karl A., to Heraeus Quarzschmelze GmbH. Refractory protective tube for the heat treatment of semiconductor components. 4,367,768, Cl. 137-527.600.
Schultz, Carl D.; and Simonton, Robert D., to Mac Engineering & Equip. Co., Inc. Apparatus for fabricating through-the-partition battery connections. 4,368,373, Cl. 219-86.220.
Schulz, Dieter: *See*—
Ahrens, Harald; and Schulz, Dieter, 4,367,952, Cl. 356-400.000.
Schwarting, Karl H.; Goris, Heinrich; Gunther, Roland; Holz, Joachim; and Ogorek, Kurt, to Maschinenfabrik Augsberg-Nurnberg Aktiengesellschaft. Tool for hydromechanical or hydraulic mining or for cutting mineral or bituminous materials. 4,367,902, Cl. 299-42.000.
Schwartz, Geraldine C.: *See*—
Eldridge, Jerome M.; Lee, Michael H.; and Schwartz, Geraldine C., 4,368,220, Cl. 427-255.400.
Schwartzman, Everett H. Turbocharger systems. 4,367,626, Cl. 60-606.000.
Schwarz, Rudolf, to Staeubli Ltd. Rotational dobby. 4,367,770, Cl. 139-66.00R.
Schweingruber, Hermann, to Bobst SA. Device for creating batches of flat workpieces such as box blanks. 4,367,997, Cl. 414-38.000.
Schwing, Gregory W.: *See*—
Chen, Chi-wan; and Schwing, Gregory W., 4,368,069, Cl. 71-93.000.
Scott, Hasso: *See*—
Shimmel, Gunther; Heymer, Gero; and Scott, Hasso, 4,368,179, Cl. 423-315.000.
Scott, Paul T., to Du Pont de Nemours, E. I., and Company. Method for removing aluminum from polyethylene teraphthalate (PET) bottle scrap. 4,368,274, Cl. 521-48.000.
Seabase, Peter P.: *See*—
Heimovics, John F., Jr.; and Seabase, Peter P., 4,368,009, Cl. 417-191.000.
Seidel, Hans-Joachim: *See*—
Herden, Werner; Hochenberger, Hans-Martin; Neu, Hans; Seidel, Hans-Joachim; Pfander, Werner; Gruner, Heiko; Zabler, Erich; Pilch, Claus-Dietrich; and Linn, Karl-Otto, 4,368,453, Cl. 338-25.000.
Seidler, Jack. Mini-terminal. 4,367,910, Cl. 339-275.00B.
Seiver, Robert L., to Exxon Research and Engineering Co. Composition for use in a magnetically fluidized bed. 4,368,132, Cl. 252-62.550.
Seki, Tadao: *See*—
Komatsu, Takashi; Seki, Tadao; and Igarashi, Yuichi, 4,368,493, Cl. 360-93.000.
Sekisui Kagaku Kogyo Kabushiki Kaisha: *See*—
Miura, Yoshiharu; Okazaki, Mitsuo; Komemushi, Setsuo; Sakata, Tenji; Shiroza, Satoshi; and Obana, Satoshi, 4,368,271, Cl. 435-247.000.
Seliger, Robert L., to Hughes Aircraft Company. High resolution masking process for minimizing scattering and lateral deflection in collimated ion beams. 4,368,215, Cl. 427-38.000.
Senda, Kenichi; Nishida, Tatehiko; and Nakagawa, Masao, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Method of making expandable thermoplastic polymer beads. 4,368,218, Cl. 427-222.000.
Sendoykas, Jack J. Detachable hinge assembly. 4,367,567, Cl. 16-263.000.
Senese, Frank J.: *See*—
Keller, Gerald H.; Senese, Frank J.; and Vlasic, John G., 4,367,827, Cl. 222-2.000.
Senturia, Stephen D., to Massachusetts Institute of Technology. Multiplexing of chemically responsive FETs. 4,368,480, Cl. 357-25.000.
Seragnoli, Enzo, to G.D Societa per Azioni. Cigarette manufacturing machine of the continuous rod type. 4,367,758, Cl. 131-84.00B.
Sergev, Sergius S.; and Roster, Theodore J., to United States of America, Navy. Automatic temperature control system for diver heating system. 4,367,845, Cl. 236-21.00R.
Service (Engineers) Limited: *See*—
Ryckman, George, deceased, 4,368,021, Cl. 425-265.000.
Setsuie, Takashi; Mimura, Koji; and Okamura, Kiyonobu, to Mitsubishi Rayon Company, Limited. Suede-like sheet materials of ultrafine fibers. 4,368,227, Cl. 428-91.000.
Seubert, George A., Jr.: *See*—
Pollock, Mark W.; and Seubert, George A., Jr., 4,368,139, Cl. 252-384.000.
Sevenich, Theodor: *See*—
Fabian, Wolfgang; Heinen, Horst; and Sevenich, Theodor, 4,367,832, Cl. 226-108.000.
SGS-ATES Componenti Elettronici S.p.A.: *See*—
Palara, Sergio; and Tintori, Silvano, 4,368,436, Cl. 330-207.00P.
Shaak, Ray N.: *See*—
Brummett, Charles R.; Crumley, J. A.; Shaak, Ray N.; and Whitaker, Dewey R., 4,368,281, Cl. 523-458.000.

Shapiro, Maurice S., to Combustion Engineering, Inc. Fluid pressure-tensioned slip joint for drilling riser. 4,367,981, Cl. 405-195.000.

Sharp Kabushiki Kaisha: *See—*
Togawa, Fumio; Shimazawa, Yoichi; and Suzuki, Hitoshi, 4,368,474, Cl. 346-75.000.

Shatto, Walter C., Jr.; and Young, Walter M., to AMP Incorporated. Ribbon cable connector. 4,367,909, Cl. 339-176.0MF.

Shaw, David H.: *See—*
Thompson, John A.; Shaw, David H.; and Gudelis, David A., 4,368,112, Cl. 208-31.000.

Shea, Frank: *See—*
Drucker, Jacob; and Shea, Frank, 4,368,184, Cl. 424-66.000.

Shefter, Eli; Smith, Francis X.; and Gardner, Mark J., to Research Corporation. Zinc aminophylline and its use in the treatment of bronchospasms. 4,368,197, Cl. 424-245.000.

Shell Oil Company: *See—*
Diaz, Zaida, 4,368,178, Cl. 423-226.000.
Slaugh, Lynn H., 4,368,342, Cl. 585-446.000.

Shen, Tsung-Ying; Durette, Philippe L.; Dorn, Conrad P., Jr.; Doherty, James B.; and Dean, Richard T., to Merck & Co., Inc. Immunologically active dipeptidyl 4-O-,6-O-acyl-2-amino-2-deoxy-D-glucose derivatives and methods for their preparation. 4,368,190, Cl. 424-88.000.

Sherk, Fred T.; and Hammer, Harry B., to Phillips Petroleum Company. Elevated, declining pressure dehydration of poly(arylene sulfide) prepolymerization mixture. 4,368,321, Cl. 528-388.000.

Shibata, Koichiro, to Cuisinarts, Inc. French fry cutter for food processors. 4,367,667, Cl. 83-356.300.

Shibatani, Kyoichiro: *See—*
Yamauchi, Junichi; Masuhara, Eiichi; Nakabayashi, Nobuo; Shibatani, Kyoichiro; and Wada, Tooru, 4,368,043, Cl. 433-217.000.

Shibuya, Kiyoshi; and Shirai, Hitoshi, to Fujitsu Limited. Frequency shift keying system. 4,368,439, Cl. 332-9.00R.

Shigehara, Itaru: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Shigehara, Itaru; and Miyaji, Mikio, 4,368,340, Cl. 570-207.000.

Shikakura, Kunio: *See—*
Sakano, Akio; Shikakura, Kunio; Tamaru, Hideshi; and Yoshida, Kimiyoshi, 4,368,528, Cl. 369-136.000.

Shikama, Masaharu: *See—*
Hayashi, Masahiro; Yoshimura, Tamotsu; Mukai, Seiichi; Shikama, Masaharu; Kusumoto, Hideto; and Yamanouchi, Hideki, 4,368,286, Cl. 524-394.000.

Shikata, Makoto: *See—*
Nakamura, Hiroyuki; Shikata, Makoto; and Ohgami, Masaaki, 4,367,708, Cl. 123-339.000.

Shimauchi, Yasutaka: *See—*
Okamura, Kazuhiko; Hirata, Shoji; Okumura, Yasushi; Fukagawa, Yasuo; Shimauchi, Yasutaka; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,368,203, Cl. 424-274.000.

Shimazawa, Yoichi: *See—*
Togawa, Fumio; Shimazawa, Yoichi; and Suzuki, Hitoshi, 4,368,474, Cl. 346-75.000.

Shimizu, Shin-ichi: *See—*
Yanagiako, Hiroshi; Kanai, Toshio; Kogawa, Yoshio; Yoshida, Michihiro; Mashino, Zenji; Shimizu, Shin-ichi; Sugiya, Teruo; and Onozaki, Masaki, 4,368,060, Cl. 55-73.000.

Shimmel, Gunther; Heymer, Gero; and Scott, Hasso, to Hoechst Aktiengesellschaft. Process for the oxidation of alkali metal phosphites. 4,368,179, Cl. 423-315.000.

Shin-Etsu Chemical Co., Ltd.: *See—*
Nakajima, Kaoru; Somezawa, Masashi; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, 4,368,242, Cl. 428-447.000.

Shindauletova, Aigul T.: *See—*
Abishev, Dzhantore N.; Buketov, Evnei A.; Shindauletova, Aigul T.; Baltynova, Nazymkul; Babskaya, Ida N.; Kobzhasov, Abubakir K.; Malyshev, Vitaly P.; Bauer, Ivan K.; Mukhamedinov, Murat M.; Kusainov, Temirkhan A.; Orazalina, Kasken N.; and Buketov, Eslambek A., 4,368,176, Cl. 423-25.000.

Shinko Denshi Company Limited: *See—*
Nishiguchi, Yuzuru, 4,368,382, Cl. 235-92.0PK.

Shinshu Seiki Kabushiki Kaisha: *See—*
Koto, Haruhiko, 4,368,478, Cl. 346-140.00R.

Shintani, Sotokichi: *See—*
Sato, Akira; Niiya, Masamichi; Takeuchi, Masayuki; Fukai, Masaru; and Shintani, Sotokichi, 4,368,360, Cl. 179-170.200.

Shirai, Hitoshi: *See—*
Shibuya, Kiyoshi; and Shirai, Hitoshi, 4,368,439, Cl. 332-9.00R.

Shirako, Hideo, to Olympus Optical Company Ltd. Tape cassette. 4,368,497, Cl. 360-132.000.

Shirasaka, Yoshihiro: *See—*
Ohashi, Hiromichi; and Shirasaka, Yoshihiro, 4,368,481, Cl. 357-30.000.

Shirasu, Hiroshi; Ogasawara, Akira; and Utagawa, Ken, to Nippon Kogaku K.K. System for focus detection utilizing a photoelectric sensor array. 4,368,383, Cl. 250-201.000.

Shirasu, Kazuo: *See—*
Uenaka, Kazushige; Kashiwagi, Shinichi; Tahara, Toshiro; Shirasu, Kazuo; Usui, Yoshio; Abe, Akira; Nakagawa, Fumio; and Masuda, Tetsuya, 4,367,941, Cl. 354-324.000.

Shiroza, Satoshi: *See—*
Miura, Yoshiharu; Okazaki, Mitsuo; Komemushi, Setsuo; Sakata, Tenji; Shiroza, Satoshi; and Obana, Satoshi, 4,368,271, Cl. 435-247.000.

Shisler, Robert W., to RCA Corporation. Television deflection yoke. 4,368,445, Cl. 335-210.000.

Sholes, John T., II, to Dresser Industries, Inc. Method and apparatus for dragline tightline protection. 4,368,521, Cl. 364-506.000.

Shovers, John: *See—*
Weber, Meyer M.; and Shovers, John, 4,368,270, Cl. 435-226.000.

Shupe, Charles A.: *See—*
Stewart, John K.; Shupe, Charles A.; and von Beckmann, Helmuth, 4,367,681, Cl. 104-7.00B.

SI Handling Systems, Inc.: *See—*
Tokunaga, Kinjiro, 4,367,683, Cl. 104-166.000.

Sibley, Henry C., to General Signal Corporation. Keyboard controlled vital digital communication system. 4,368,534, Cl. 371-53.000.

Siddall, Mark B., to Teledyne Industries, Inc. Iodide cell vapor pressure control. 4,368,072, Cl. 75-84.400.

Siden, Steven D.: *See—*
Jornod, Eugene R.; and Siden, Steven D., 4,368,502, Cl. 361-192.000.

Siefkin, James M.; and Boesiger, Dwight D., to Phillips Petroleum Company. Oil recovery from tar sands. 4,368,111, Cl. 208-11.0LE.

Siegel, Stefan A., to RCA Corporation. Method for cleaving an optical fiber. 4,368,064, Cl. 65-105.000.

Sielfeld, Gilbert; and Sunder-Plassmann, Paul, to Chemische Werke Huls AG. Process for the production of vinyl chloride polymers. 4,368,307, Cl. 526-202.000.

Siemens Aktiengesellschaft: *See—*
Amtmann, Heribert; Forkel, Hermann; and Gerlach, Hans-Jurgen, 4,368,537, Cl. 378-112.000.
Baumann, Heinz, 4,368,535, Cl. 378-15.000.
Heinzl, Joachim; Kattner, Erich; and Rosenstock, Guenter, 4,368,477, Cl. 346-140.00R.
Hilgner, Reinhard; Utz, Wolfgang; and Schroder, Heinrich, 4,367,650, Cl. 73-649.000.
Martin, Erwin; and Walliser, Konrad, 4,368,401, Cl. 310-324.000.
Pfeiler, Manfred, 4,368,536, Cl. 378-19.000.
Pollerspock, Kurt, 4,367,825, Cl. 220-346.000.
Preuss, Bernhard; and Koziolek, Werner, 4,368,444, Cl. 335-166.000.
Schnapper, Christoph; and Intichar, Lutz, 4,368,397, Cl. 310-52.000.
Spirk, Franz, 4,367,890, Cl. 290-52.000.

Siemens Corporation: *See—*
Levy, Allan, 4,368,432, Cl. 328-14.000.

Sietmann, Vernon H.: *See—*
Lukehart, Leonard J.; and Sietmann, Vernon H., 4,367,689, Cl. 114-346.000.

Sigma Electronics Limited: *See—*
Quilliam, John E. H., 4,368,463, Cl. 340-744.000.

'Sigmond, Emod: *See—*
Szucs, Laszlo; Horvath, Andras; 'Sigmond, Emod; Szabo, Imre; and Toth, Verona, 4,367,595, Cl. 34-27.000.

Sikdar, Subhas K., to General Electric Company. Catalyzed interfacial polycondensation polycarbonate process. 4,368,315, Cl. 528-198.000.

Simonton, Robert D.: *See—*
Schultz, Carl D.; and Simonton, Robert D., 4,368,373, Cl. 219-86.220.

Simpson Manufacturing Co., Inc.: *See—*
Gilb, Tyrell T.; and Commins, Alfred D., 4,367,973, Cl. 403-405.000.

Sinclair, David A.; and Smith, Ian R., to National Research Development Corporation. Dark field viewing apparatus. 4,367,648, Cl. 73-620.000.

Singer, Arnold J.: *See—*
Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, 4,368,207, Cl. 424-343.000.

Singh, Vir B.: *See—*
Newton, Alan B.; Nield, Eric; and Singh, Vir B., 4,368,295, Cl. 525-166.000.

Single Vend, Inc.: *See—*
Glaser, Robert L., 4,367,826, Cl. 221-213.000.

Siposs, George G. Blood-air separator and filter. 4,368,118, Cl. 210-136.000.

Sisas S.p.A.: *See—*
Carra, Sergio; Santacesaria, Elio; Morbidelli, Massimo; Codignola, Franco; and DiFiore, Lucio, 4,368,347, Cl. 585-828.000.

Sivanesan, Appukuddy; Geiger, Erich; and Rilly, Gerard, to Thomson-Brandt. Switching regulator power supply device combined with the horizontal deflection circuit of a television receiver which it supplies. 4,368,409, Cl. 315-411.000.

Skala, Stephen F. Internal combustion engine based on reactant contact ignition. 4,367,698, Cl. 123-1.00A.

SKF Kugallagerfabriken GmbH: *See—*
Olschewski, Armin; Brandenstein, Manfred; and Walter, Lothar, 4,367,904, Cl. 384-95.000.

Slaugh, Lynn H., to Shell Oil Company. Benzene alkylation process. 4,368,342, Cl. 585-446.000.

Slepcevic, Dusan. Method for encapsulating electrical components. 4,368,168, Cl. 264-272.140.

Smeds, Stig-Eric. Method and apparatus for achieving a draught-free environment. 4,368,377, Cl. 219-345.000.

Smith, Francis X.: *See—*
Shefter, Eli; Smith, Francis X.; and Gardner, Mark J., 4,368,197, Cl. 424-245.000.

Smith, Ian R.: *See—*
Sinclair, David A.; and Smith, Ian R., 4,367,648, Cl. 73-620.000.

Smith, John F., to Colgate-Palmolive Company. Method and apparatus for manufacturing destifrice containing dispersed speckles. 4,368,089, Cl. 156-243.000.
Smith, Terry G. Portable gold collection apparatus. 4,367,989, Cl. 406-153.000.
Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A.: *See*—
Angelini, Gianfranco; and Paoletti, Ugo, 4,368,078, Cl. 106-164.000.
Societe Anonyme des Usines Chausson: *See*—
Moranne, Jean-Pierre, 4,367,789, Cl. 165-76.000.
Societe Anonyme dite: Alsthom-Atlantique: *See*—
Lapart, Andre, 4,368,004, Cl. 415-39.000.
Societe Europeenne des Produits Refractaires: *See*—
Bourdon, Jean-Marc; Hugues, Jean-Claude; and Esnoult, Marc, 4,368,038, Cl. 432-253.000.
Societe Lyonnaise des Applications Catalytiques: *See*—
Lacroix, Alain, 4,368,029, Cl. 431-7.000.
Solari, Ray L. Safety sport goggles. 4,367,561, Cl. 2-439.000.
Solbrig, Christian: *See*—
Deubzer, Bernward; Esterbauer, Josef; Solbrig, Christian; and Frey, Volker, 4,368,294, Cl. 525-100.000.
Sole, Gary M. Medical instrument, and method of utilizing same. 4,367,744, Cl. 128-303.100.
Solvay & Cie.: *See*—
Lorge, Michel; and Houba, Roger, 4,368,027, Cl. 425-527.000.
Somezawa, Masashi; Ninomiya, Yoshinobu; and Hashimoto, Akira, to Sony Corporation. Magnetic recording media. 4,368,238, Cl. 428-413.000.
Somezawa, Masashi: *See*—
Nakajima, Kaoru; Somezawa, Masashi; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, 4,368,242, Cl. 428-447.000.
Sony Corporation: *See*—
Nakajima, Kaoru; Kobayashi, Kunio; and Hisagen, Yoshiaki, 4,368,239, Cl. 428-421.000.
Nakajima, Kaoru; Somezawa, Masashi; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, 4,368,242, Cl. 428-447.000.
Sakano, Akio; Shikakura, Kunio; Tamaru, Hideshi; and Yoshida, Kimiyoshi, 4,368,528, Cl. 369-136.000.
Somezawa, Masashi; Ninomiya, Yoshinobu; and Hashimoto, Akira, 4,368,238, Cl. 428-413.000.
Soroka, Daniel P., to Westinghouse Electric Corp. Broaching machine. 4,367,992, Cl. 409-264.000.
Spaccarotella, Antonio: *See*—
Praitoni, Alberto; and Spaccarotella, Antonio, 4,367,784, Cl. 164-473.000.
Spath, Hans; and Donner, Meinrad, to Maag Gear-Wheel & Machine Co. Ltd. Method of measuring errors in the truth of rotation of a gear. 4,368,522, Cl. 364-550.000.
Speirs, Graeme K.; and Cameron, Anthony D., to Webco Industrial Rubber Limited. Adjustable clamp for fastening around a tubular or like object. 4,367,571, Cl. 24-249.00R.
Speitel, Francois X.; and Speitel, Robert F. M., to Teleplastics Industries Company. Casing for lipstick or ball point pen refills. 4,367,965, Cl. 401-60.000.
Speitel, Robert F. M.: *See*—
Speitel, Francois X.; and Speitel, Robert F. M., 4,367,965, Cl. 401-60.000.
Sperry Corporation: *See*—
Naaktgeboren, Adrianus; and Vansteelant, Marc G., 4,368,000, Cl. 414-111.000.
Spielvogel, Bernard F.; McPhail, Andrew T.; and Hall, Iris H., to United States of America, Army. Pharmacologically active amine boranes. 4,368,194, Cl. 424-185.000.
Spirk, Franz, to Siemens Aktiengesellschaft. Turbine set with a generator feeding a network of constant frequency. 4,367,890, Cl. 290-52.000.
Spitzer, Wayne A.; Kukolja, Stjepan; Goodson, Theodore, Jr.; and Lammert, Steven R., to Eli Lilly and Company. Preparation of 4-haloazetidin-2-ones from 4-sulfinoazetidin-2-ones. 4,368,156, Cl. 260-239.00A.
Sprague, Robert A.; and Turner, William D., to Xerox Corporation. Integrated electronics for proximity coupled electro-optic devices. 4,367,925, Cl. 350-355.000.
Sprecher & Schuh AG: *See*—
Roth, Adrian W.; and Wuthrich, Hans-Rudolf, 4,368,367, Cl. 200-148.00A.
Staeubli Ltd.: *See*—
Schwarz, Rudolf, 4,367,770, Cl. 139-66.00R.
Standard Oil Company (Indiana): *See*—
Barkis, Edward; Crummer, Robert R.; and Joyner, James M., 4,368,233, Cl. 428-245.000.
Standard Products Company, The: *See*—
Jackson, Norman C., 4,368,224, Cl. 428-31.000.
Nussbaum, Joel H., 4,368,225, Cl. 428-31.000.
Stanley, Bedford F. Regenerative counter top water conditioner. 4,368,123, Cl. 210-269.000.
Starkov, Evgeny N.: *See*—
Rubinshtein, Georgy M.; Yatsenko, Sergei P.; Diev, Valery N.; Zlokazova, Tatyana M.; Fomin, Eduard S.; Moskov, Ruslan N.; Grigorieva, Anastasia D.; Davydov, Ivan V.; Starkov, Evgeny N.; Ovsyannikov, Vladimir I.; Eremeev, Arnold F.; and Lavrenchuk, Vladimir N., 4,368,108, Cl. 204-43.00R.
Starkstrom Gummersbach GmbH: *See*—
Ludorf, Reiner, 4,368,450, Cl. 337-363.000.
Staron, Thadee J., to Institute National de la Recherche Agronomique. Process for producing food proteins of fungal origin of from multicellular organisms fermentation apparatus and proteins so-produced. 4,368,269, Cl. 435-172.000.
Starwin Industries, Inc.: *See*—
Staub, Anthony F.; Staub, Norman T.; and Erwin, John R., 4,367,874, Cl. 273-73.00R.
Staub, Anthony F.; Staub, Norman T.; and Erwin, John R., to Starwin Industries, Inc. Tennis racquet and method of making same. 4,367,874, Cl. 273-73.00R.
Staub, Norman T.: *See*—
Staub, Anthony F.; Staub, Norman T.; and Erwin, John R., 4,367,874, Cl. 273-73.00R.
Staubs, David W.: *See*—
Winter, William E.; Tunison, Mafer E.; and Staubs, David W., 4,368,113, Cl. 208-89.000.
Steag Aktiengesellschaft: *See*—
Adrian, Fritz, 4,367,686, Cl. 110-347.000.
Stefan, Mihaly; Hegedus, Zoltan; Bagi nee Schmidt, Terezia; Dorner, Henrik; Kanyo, Miklos; and Fuzesi, Pal, to Bacs Megyei Allami Epitoipari Vallalat; and Csepel Muvek Tervezo es Kutato Intezete. Process for coating fibrous glass with amorphous nickel phosphorous glass metal. 4,368,221, Cl. 427-305.000.
Steinberg, George N.; and Reinberg, Alan R., to Perkin-Elmer Corporation, The. Apparatus for the etching for semiconductor devices. 4,368,092, Cl. 156-345.000.
Stemme, Otto; and Wagensonner, Eduard, to Agfa-Gevaert AG. Device for color scanning with CCD array. 4,368,484, Cl. 358-41.000.
Stemme, Otto; Wagensonner, Eduard; and Ruf, Wolfgang, to Agfa-Gevaert AG. Galvanometer-type tilting-mirror scanning system and circuit therefor. 4,368,489, Cl. 358-208.000.
Stephenson, Ronald G. Feeder for nailing machine. 4,367,835, Cl. 227-109.000.
Stewart, John K.; Shupe, Charles A.; and von Beckmann, Helmuth, to Canron Corp. Dynamic loading correcting device. 4,367,681, Cl. 104-7.00B.
Stienstra, Jan B., to OCE-Nederland B.V. System for detecting sheet-like objects. 4,368,438, Cl. 331-14.000.
Stiff, Alonzo B.; and Harris, Gilbert L., to Jordan, Russell Eugene. Automatic steering mechanism for use on apparatus forming beds of uniform widths and rows of uniform spacing. 4,367,802, Cl. 180-131.000.
Stifter, Francis J., to Electronic Specialists, Inc. Electrical equipment protection apparatus. 4,368,499, Cl. 361-90.000.
Stimtech, Inc.: *See*—
Bailey, William D., 4,367,755, Cl. 128-798.000.
Stover, William A.: *See*—
Chester, Arthur W.; Cormier, William E., Jr.; and Stover, William A., 4,368,114, Cl. 208-120.000.
Strabag Bau-AG: *See*—
Weiser, Martin, 4,367,568, Cl. 24-122.600.
Strang, Charles D., to Outboard Marine Corporation. High pivot transom bracket assembly for mounting outboard motor. 4,367,860, Cl. 248-641.000.
Strathman, Ronald L. Battery and solar powered refrigerating system. 4,367,633, Cl. 62-236.000.
Strauss, Georg: *See*—
Braun, Albert; Portz, Willi; Strauss, Georg; and Delhey, Hans-Martin, 4,368,071, Cl. 75-0.50R.
Streich, Steven G., to Halliburton Company. Leg closure. 4,367,983, Cl. 405-227.000.
Strippers Paint Removal Services Ltd.: *See*—
Poels, Philip, 4,368,082, Cl. 134-4.000.
Stroman, David W.: *See*—
Argoudelis, Alexander D.; and Stroman, David W., 4,368,193, Cl. 424-180.000.
Stromgren, Lawrence T. Ankle support. 4,367,733, Cl. 128-166.000.
Strommer, Deon L.: *See*—
Blake, Jon R.; Knutson, Richard K.; and Strommer, Deon L., 4,368,211, Cl. 426-564.000.
Strub, Robert D. Stairs and method of making the same. 4,367,613, Cl. 52-188.000.
Stufflebeam, Donnie L.: *See*—
Cameron, Donald C.; Stufflebeam, Donnie L.; and Ekey, John W., 4,367,651, Cl. 73-706.000.
Subera, Elmer J.: *See*—
Ibrahim, Fayez F.; Subera, Elmer J.; and Myers, James E., 4,367,632, Cl. 62-82.000.
Sudchemie Aktiengesellschaft: *See*—
Dorr, Karl-Heinz; Grimm, Hugo; Sander, Ulrich; Peichl, Robert; and Maier, Franz, 4,368,183, Cl. 423-522.000.
Sudo, Kyuji: *See*—
Nagata, Koji; Sudo, Kyuji; Nishikawa, Mamoru; and Tachibana, Kikuji, 4,368,219, Cl. 427-236.000.
Sudreau, Bernard: *See*—
de Sivry, Bruno; Sudreau, Bernard; Carsac, Claude; Hamon, Jean-Pierre; and Fuzeau, Michel, 4,368,374, Cl. 219-121.0EN.
Sugimoto, Koichi: *See*—
Hirabayashi, Hisaaki; and Sugimoto, Koichi, 4,367,591, Cl. 33-169.00C.
Suginaka, Akinori: *See*—
Mizuno, Mitsuo; Suginaka, Akinori; Fujii, Masahiko; and Akimoto, Shinichi, 4,368,185, Cl. 424-78.000.
Sugitani, Junichi: *See*—
Takahashi, Makoto; and Sugitani, Junichi, 4,368,172, Cl. 420-584.000.
Sugiura, Noboru, to Hitachi, Ltd. Ignition timing control system for internal combustion engine. 4,367,712, Cl. 123-427.000.

Sugiya, Teruo: *See*—
Yanagiako, Hiroshi; Kanai, Toshio; Kogawa, Yoshio; Yoshida, Michihiro; Mashino, Zenji; Shimizu, Shin-ichi; Sugiya, Teruo; and Onozaki, Masaki, 4,368,060, Cl. 55-73.000.

Sugiyama, Tetuo: *See*—
Sakuma, Kiyoshi; Nakazima, Isamu; and Sugiyama, Tetuo, 4,367,636, Cl. 62-262.000.

Sulzberg, Theodore: *See*—
Laddha, Sudhir L.; and Sulzberg, Theodore, 4,368,316, Cl. 528-295.500.

Sulzer Brothers Limited: *See*—
Wall, Erich, 4,367,772, Cl. 139-435.000.

Sumitomo Chemical Company, Limited: *See*—
Watanabe, Katsuyoshi; Andoh, Makoto; Saito, Yasuhisa; Maeda, Yasuteru; and Fukuyama, Yoshiya, 4,368,299, Cl. 525-481.000.
Yamada, Hirotada; Nakagome, Takenari; and Komatsu, Toshiaki, 4,368,198, Cl. 424-246.000.

Sumitomo Light Metal Industries Ltd.: *See*—
Nagata, Koji; Sudo, Kyuji; Nishikawa, Mamoru; and Tachibana, Kikuji, 4,368,219, Cl. 427-236.000.

Summagraphics Corporation: *See*—
Davis, Robert, 4,368,352, Cl. 178-19.000.
Zimmer, Scott E., 4,368,351, Cl. 178-19.000.

Summerlin, Frederick A.: *See*—
Francis, Albert C.; and Summerlin, Frederick A., 4,367,994, Cl. 411-43.000.

Sun Chemical Corporation: *See*—
Laddha, Sudhir L.; and Sulzberg, Theodore, 4,368,316, Cl. 528-295.500.

Sunbeam Corporation: *See*—
Swanson, Charles E., 4,368,379, Cl. 219-494.000.

Sunbeam Equipment Corporation: *See*—
Acker, John N.; and Petersen, Robert A., 4,367,866, Cl. 266-99.000.

Sunder-Plassmann, Paul: *See*—
Sielfeld, Gilbert; and Sunder-Plassmann, Paul, 4,368,307, Cl. 526-202.000.

Sunkel, Manfred: *See*—
Becker, Herbert; Schelhorn, Gerhard; and Sunkel, Manfred, 4,367,660, Cl. 74-625.000.

Sutter, David L., to Hussey Manufacturing Company. Composite supporting structure. 4,367,612, Cl. 52-9.000.

Suttles, James M., to Mead Corporation, The. Forward feed merchandising device for soft drink bottles. 4,367,818, Cl. 211-49.00D.

Suzuki, Hiroshige; and Hase, Teizo, to Suzuki, Hiroshige. Method of producing β-silicon carbide. 4,368,181, Cl. 423-345.000.

Suzuki, Hitoshi: *See*—
Togawa, Fumio; Shimazawa, Yoichi; and Suzuki, Hitoshi, 4,368,474, Cl. 346-75.000.

Suzuki, Koji, to Canon Kabushiki Kaisha. Surface potential electrometer and image forming apparatus using the same. 4,367,948, Cl. 355-14.00D.

Suzuki, Makoto, to Toyota Jidosha Kogyo Kabushiki Kaisha. Combustion chamber of an internal combustion engine. 4,367,707, Cl. 123-306.000.

Suzuki, Zituo: *See*—
Naito, Junichiro; Yamamoto, Shinichi; Suzuki, Zituo; and Asano, Mitsuru, 4,368,025, Cl. 425-462.000.

Swanson, Charles E., to Sunbeam Corporation. Toaster having toasting control for convenience foods. 4,368,379, Cl. 219-494.000.

Swetnam, Larry D.; Casada, James H.; and Walton, Linus R., to University of Kentucky Research Foundation, The. Crop harvester including a quickly adjustable semi-floating, self-steering cutter head. 4,367,621, Cl. 56-10.200.

Syme, Duncan C., to Vermont Castings, Inc. Wood and coal burning heating method and apparatus. 4,367,725, Cl. 126-77.000.

Syntex (U.S.A.) Inc.: *See*—
Vickery, Brian H.; Anik, Shabbir; and Jones, Richard E., 4,368,186, Cl. 424-78.000.

Szabo, Andras I.: *See*—
Hwang, Eddie Y.; Szabo, Andras I.; and Ottobre, Louis G., 4,368,520, Cl. 364-494.000.

Szabo, Imre: *See*—
Szucs, Laszlo; Horvath, Andras; 'Sigmond, Emod; Szabo, Imre; and Toth, Verona, 4,367,595, Cl. 34-27.000.

Szabo nee Mogyorosi, Katalin: *See*—
Kovacs, Laszlo; Moger nee Ereminева, Galina; Gal, Dezso; Hajdu, Peter; Lukacs, Julia; Kroo, Erik; Nemes, Istvan; Nemeth, Andras; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Riederauer, Szilard; and Szepvolgyi, Janos, 4,368,333, Cl. 562-407.000.

Szen, Tamas: *See*—
Boor nee Mezei, Anna; Toth, Jozsef; Szen, Tamas; Gabor, Laszlo; Major nee Fastner, Piroska; and Holly, Sandor, 4,368,160, Cl. 260-397.400.

Szentgyorgyi, Geza: *See*—
Kovacs, Laszlo; Moger nee Ereminева, Galina; Gal, Dezso; Hajdu, Peter; Lukacs, Julia; Kroo, Erik; Nemes, Istvan; Nemeth, Andras; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Riederauer, Szilard; and Szepvolgyi, Janos, 4,368,333, Cl. 562-407.000.

Szepvolgyi, Janos: *See*—
Kovacs, Laszlo; Moger nee Ereminева, Galina; Gal, Dezso; Hajdu, Peter; Lukacs, Julia; Kroo, Erik; Nemes, Istvan; Nemeth, Andras; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Riederauer, Szilard; and Szepvolgyi, Janos, 4,368,333, Cl. 562-407.000.

Szoke, Sandor; Lugosi, Gyorgy; Bakonyi, Maria; Ghyczy, Jeno; and Csermely, Gyorgy, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt. Process for preparing alkylthiobenzimidazoles. 4,368,328, Cl. 548-306.000.

Szucs, Laszlo; Horvath, Andras; 'Sigmond, Emod; Szabo, Imre; and Toth, Verona, to Energiagazdalkodasi Intezet. Method and apparatus for drying products, especially corn or piece products. 4,367,595, Cl. 34-27.000.

Tachibana, Kikuji: *See*—
Nagata, Koji; Sudo, Kyuji; Nishikawa, Mamoru; and Tachibana, Kikuji, 4,368,219, Cl. 427-236.000.

Tachiuchi, Tsuguji: *See*—
Komatsu, Shigeru; Nagai, Kunihiko; Koyama, Takuo; Tachiuchi, Tsuguji; Kobayashi, Mikiaki; and Kurita, Toshiyuki, 4,368,461, Cl. 340-703.000.

Tada, Kuniyuki; Minomiya, Eiichi; and Inoue, Takehisa, to Toray Industries, Incorporated. Process for the isomerization of a halogenated toluene. 4,368,339, Cl. 570-202.000.

Tahara, Toshiro: *See*—
Uenaka, Kazushige; Kashiwagi, Shinichi; Tahara, Toshiro; Shirasu, Kazuo; Usui, Yoshio; Abe, Akira; Nakagawa, Fumio; and Masuda, Tetsuya, 4,367,941, Cl. 354-324.000.

Taiyo Musen Co. Ltd.: *See*—
Mori, Kenzo; Yasuda, Hyo; and Koshi, Masaru, 4,368,470, Cl. 343-113.00R.

Takada, Juichiro. Automatic passive safety seat belt system for a vehicle. 4,367,887, Cl. 280-803.000.

Takahara, Michio: *See*—
Hayakawa, Masatoshi; Ogi, Koei; and Takahara, Michio, 4,367,574, Cl. 29-25.190.

Takahashi, Eiki: *See*—
Kobayashi, Shigeo; Kobayashi, Kazuo; and Takahashi, Eiki, 4,368,448, Cl. 336-61.000.

Takahashi, Hiroshi: *See*—
Murakami, Sanpei; Kokeguchi, Sadao; Takahashi, Hiroshi; and Okada, Ken, 4,368,210, Cl. 426-557.000.

Takahashi, Jiro: *See*—
Komamura, Tawara; Takahashi, Jiro; and Kobayashi, Ryuichiro, 4,368,260, Cl. 430-562.000.

Takahashi, Keigo: *See*—
Hamanaka, Kunio; and Takahashi, Keigo, 4,368,495, Cl. 360-97.000.

Takahashi, Kenji; and Miyahara, Junji, to Fuji Photo Film Co., Ltd. Radiation image storage panel. 4,368,390, Cl. 250-363.00R.

Takahashi, Makoto; and Sugitani, Junichi, to Kubota, Ltd. Heat resistant cast alloy. 4,368,172, Cl. 420-584.000.

Takahashi, Tsunematsu: *See*—
Ando, Hirokazu; Ohmori, Yasuo; Fukushima, Kazumasa; Iwama, Mitsuo; and Takahashi, Tsunematsu, 4,368,353, Cl. 178-30.000.

Takamizawa, Minoru: *See*—
Nakajima, Kaoru; Somezawa, Masashi; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, 4,368,242, Cl. 428-447.000.

Takatori, Yasushi: *See*—
Uehara, Haruo; Matsumoto, Shigeyuki; Takatori, Yasushi; Ohta, Tokuya; and Matsufuji, Yohji, 4,368,476, Cl. 346-140.00R.

Takeda Chemical Industries, Ltd.: *See*—
Fujino, Masahiko; and Nishimura, Osamu, 4,368,150, Cl. 260-112.50R.
Iwamoto, Seigo; and Saito, Eiichi, 4,368,161, Cl. 260-448.00R.

Takeda, Kunihiko: *See*—
Miyake, Tetsuya; Takeda, Kunihiko; and Onitsuka, Hatsuki, 4,368,175, Cl. 423-7.000.

Takeda, Nobuhiro: *See*—
Izawa, Minoru; Takeda, Nobuhiro; and Nakano, Tasuku, 4,368,393, Cl. 307-115.000.

Takeda, Renzo: *See*—
Maruyama, Hiromi; Izumi, Masayuki; Uchikawa, Sadao; and Takeda, Renzo, 4,368,171, Cl. 376-217.000.

Takenaka, Shigeo; Hamano, Eizaburo; and Koshigoe, Shinpei, to Tokyo Shibaura Denki Kabushiki Kaisha. Electron gun for a cathode ray tube. 4,368,405, Cl. 315-16.000.

Takeuchi, Masayuki: *See*—
Sato, Akira; Niiya, Masamichi; Takeuchi, Masayuki; Fukai, Masaru; and Shintani, Sotokichi, 4,368,360, Cl. 179-170.200.

Takimoto, Hiroyuki, to Canon Kabushiki Kaisha. Camera. 4,368,490, Cl. 358-217.000.

Tamamura, Ryo: *See*—
Kobayashi, Takayuki; and Tamamura, Ryo, 4,368,223, Cl. 427-443.100.

Tamaru, Hideshi: *See*—
Sakano, Akio; Shikakura, Kunio; Tamaru, Hideshi; and Yoshida, Kimiyoshi, 4,368,528, Cl. 369-136.000.

Tanaka, Eiji: *See*—
Tanaka, Toru; and Tanaka, Eiji, 4,368,305, Cl. 526-116.000.

Tanaka, Hitoshi, to Fuji Photo Optical Co., Ltd. Water proof cover for endoscope. 4,367,730, Cl. 128-6.000.

Tanaka, Toru; and Tanaka, Eiji, to Mitsubishi Chemical Industries, Ltd. Process for producing olefin polymers. 4,368,305, Cl. 526-116.000.

Taniguchi, Nobuyuki: *See*—
Ishikawa, Norio; Taniguchi, Nobuyuki; and Yuasa, Yoshio, 4,367,932, Cl. 354-23.00D.

Taniguchi, Yoshiharu; Akiyama, Masanori; and Kinoshita, Osamu. Piezoelectric ultrasonic transducer mounted in a housing. 4,368,400, Cl. 310-322.000.

Tanikawa, Kunihiro: *See—*
Unotoro, Tomoyuki; Tanikawa, Kunihiro; Kurahashi, Keizo; Yamaguchi, Hisashi; Ito, Yuichiro; and Miyamoto, Yoshihiro, 4,368,467, Cl. 340-799.000.

Tarpley, William B., Jr., to Energy & Minerals Research Co. Apparatus for continuous discharge of material at localized damage point. 4,367,799, Cl. 169-46.000.

Tatabanyai Szenbanyak: *See—*
Kovacs, Laszlo; Moger nee Ereminеva, Galina; Gal, Dezso; Hajdu, Peter; Lukacs, Julia; Kroo, Erik; Nemes, Istvan; Nemeth, Andras; Szabo nee Mogyorosi, Katalin; Szentgyorgyi, Geza; Riederauer, Szilard; and Szepvolgyi, Janos, 4,368,333, Cl. 562-407.000.

Tate, David L.: *See—*
Exley, John T.; Kuintzle, Charles, Jr.; and Tate, David L., 4,368,005, Cl. 415-207.000.

Tawada, Yoshihisa; Ushioda, Minoru; Yamamoto, Tetsuro; and Hatano, Itaru, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Polyvinyl chloride composite material. 4,368,284, Cl. 524-230.000.

Tawara, Kinya; Kamiyama, Hiroki; Nakashizu, Shigenori; Kaneko, Takashi; Wakui, Tadahiro; and Matsumoto, Tadashi, to Maruzen Oil Co., Ltd. Process for converting glycol dialkyl ether. 4,368,337, Cl. 568-613.000.

Taylor, David L., to Harris Corporation. Differential linear to digital translator. 4,368,395, Cl. 307-455.000.

Taylor, Thomas J.: *See—*
Elliott, William A.; and Taylor, Thomas J., 4,367,585, Cl. 29-857.000.

Tazaki, Shigemitsu, to Canon Kabushiki Kaisha. Recording apparatus. 4,368,413, Cl. 318-687.000.

Techno-Chemie Kessler & Co. GmbH: *See—*
Eichelberger, Leo; and Endres, Georg, 4,368,348, Cl. 174-47.000.

Teichmann, Theodor: *See—*
Kummler, Ralph H.; Leffert, Charles B.; Ozarski, Robert G.; Piccirelli, Robert A.; and Teichmann, Theodor, 4,368,169, Cl. 376-148.000.

Teijin Limited: *See—*
Masuho, Yasuhiko; and Hara, Takeshi, 4,368,149, Cl. 260-112.00B.

Teledyne Industries, Inc.: *See—*
Crawley, Barry J., 4,368,462, Cl. 340-723.000.
Siddall, Mark B., 4,368,072, Cl. 75-84.400.

Teleplastics Industries Company: *See—*
Speitel, Francois X.; and Speitel, Robert F. M., 4,367,965, Cl. 401-60.000.

Tell-Kassenfabrik und-Tresorbau, Brack & Peter, Inh. Jucker & Co.: *See—*
Jucker, Hans, 4,367,684, Cl. 109-70.000.

Terazono, Narihiro; and Kajiyama, Ryuichi, to Mitsubishi Denki Kabushiki Kaisha. Cage position detecting apparatus. 4,368,518, Cl. 364-433.000.

Terpstra, Daniel A.; and Brundage, Richard B., to Emerson Electric Co. Sawdust collection system. 4,367,665, Cl. 83-100.000.

Tetra Pak Developpement S.A.: *See—*
Reil, Wilhelm, 4,367,828, Cl. 222-528.000.

Tetra Pak International AB: *See—*
Rausing, Hans, 4,367,842, Cl. 229-55.000.

Texas Gas Transmission Corporation: *See—*
Kummler, Ralph H.; Leffert, Charles B.; Ozarski, Robert G.; Piccirelli, Robert A.; and Teichmann, Theodor, 4,368,169, Cl. 376-148.000.

Texas Instruments Incorporated: *See—*
Guterman, Daniel C., 4,367,580, Cl. 29-571.000.

Thomas, Kim; and Van Zeggeren, Wilhelm A. Coin dispenser made with adjustable height structure. 4,367,760, Cl. 133-4.00A.

Thompson, Daniel T. Compact dough divider and forming machine. 4,368,019, Cl. 425-141.000.

Thompson, Douglas, to Boeing Company, The. Gauge apparatus and method for measuring the depth of a circumferential groove on the inside wall of a tubular part. 4,367,592, Cl. 33-172.00E.

Thompson, John A.; Shaw, David H.; and Gudelis, David A., to Exxon Research and Engineering Co. Solvent recovery from foots oil using modified regenerated cellulose membranes. 4,368,112, Cl. 208-31.000.

Thomson-Brandt: *See—*
Sivanesan, Appukuddy; Geiger, Erich; and Rilly, Gerard, 4,368,409, Cl. 315-411.000.

Thomson-CSF: *See—*
Huignard, Jean-Pierre; Le Berre, Serge; Mayeux, Christian; and Micheron, Francois, 4,368,386, Cl. 250-213.00R.
Rouge, Jean; and Robert, Andre, 4,367,649, Cl. 73-645.000.

Thornhill-Craver Company: *See—*
Raver, Clarence L., 4,367,823, Cl. 220-316.000.

Thorscov, Jan C.: *See—*
Forse, David P. S.; Franks, Richard W.; Bamford, Nigel T.; Coates, Philip V.; and Thorscov, Jan C., 4,368,456, Cl. 340-146.30Q.

TII Industries Inc.: *See—*
Ahuja, Omprakash G., 4,368,363, Cl. 179-175.30R.

Timeplex, Inc.: *See—*
Persaud, Ian K.; and Heinemann, Joseph B., 4,368,514, Cl. 364-200.000.

Times Fiber Communications, Inc.: *See—*
Pinnow, Douglas A., 4,367,918, Cl. 350-96.300.

Tintori, Silvano: *See—*
Palara, Sergio; and Tintori, Silvano, 4,368,436, Cl. 330-207.00P.

Tippmer, Kurt: *See—*
Weinzierl, Klaus; and Tippmer, Kurt, 4,368,103, Cl. 202-99.000.

Tisne-Versailles, Jacky A.: *See—*
Ancher, Jean-Francois R.; Lacour, Alain P.; Moinet, Gerard H.; and Tisne-Versailles, Jacky A., 4,368,199, Cl. 424-250.000.

Toagoesi Chemical Industry Co., Ltd.: *See—*
Endo, Takeshi; Mizutani, Kiyokazu; and Ogasawara, Takahisa, 4,368,314, Cl. 528-89.000.

Tochizawa, Ikuo: *See—*
Araki, Kazuo; and Tochizawa, Ikuo, 4,368,446, Cl. 335-258.000.

Togawa, Fumio; Shimazawa, Yoichi; and Suzuki, Hitoshi, to Sharp Kabushiki Kaisha. Ink droplet formation control in an ink jet system printer. 4,368,474, Cl. 346-75.000.

Tokai Rika Co. Ltd.: *See—*
Izawa, Minoru; Takeda, Nobuhiro; and Nakano, Tasuku, 4,368,393, Cl. 307-115.000.

Tokico Ltd.: *See—*
Ishida, Kunio, 4,367,968, Cl. 403-122.000.

Tokunaga, Kinjiro, to SI Handling Systems, Inc. Driveless vehicle with speed control. 4,367,683, Cl. 104-166.000.

Tokyo Gas Co. Ltd.: *See—*
Ontsuga, Hisao; Morinaga, Akio; and Morita, Akira, 4,368,091, Cl. 156-287.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Araya, Hiroyuki; Saito, Toshihito; Kumazawa, Katsuyoshi; Sakamoto, Moriyoshi; and Koyama, Mitoshi, 4,368,032, Cl. 431-118.000.
Baba, Masaharu; Honda, Kiyokazu; and Hashima, Akiyoshi, 4,367,573, Cl. 29-25.130.
Furuyama, Tohru, 4,368,529, Cl. 365-205.000.
Hamanaka, Kunio; and Takahashi, Keigo, 4,368,495, Cl. 360-97.000.
Inomata, Koichiro; and Hasegawa, Michio, 4,368,447, Cl. 336-20.000.
Inoue, Hiroshi; Komeya, Katsutoshi; and Tsuge, Akihiko, 4,368,180, Cl. 423-344.000.
Kawate, Keiichi, 4,368,523, Cl. 365-63.000.
Kojima, Tadashi, 4,368,533, Cl. 371-37.000.
Komatsu, Takashi; Seki, Tadao; and Igarashi, Yuichi, 4,368,493, Cl. 360-93.000.
Ohashi, Hiromichi; and Shirasaka, Yoshihiro, 4,368,481, Cl. 357-30.000.
Takenaka, Shigeo; Hamano, Eizaburo; and Koshigoe, Shinpei, 4,368,405, Cl. 315-16.000.

Tomaszewski, Jerzy; Chmarzynski, Andrzej; and Nowakowski, Rafal, to Uniwersytet Mikolaja Kopernika. Method of sealing salina excavations. 4,367,985, Cl. 405-264.000.

Tomcufcik, Andrew S.: *See—*
Meyer, Walter E.; Tomcufcik, Andrew S.; and Marsico, Joseph W., Jr., 4,368,335, Cl. 564-245.000.

Tomforde, Johann, to Daimler-Benz Aktiengesellschaft. Automotive vehicle headlight lens cleaning device. 4,368,505, Cl. 362-80.000.

Tomlinson, David, to Tweedy of Burnley Limited. Dough mixing for farinaceous foodstuff production. 4,368,209, Cl. 426-504.000.

Toogood, Graham J., to Dowty Hydraulic Units Limited. Gear motor with fluid pressure groove and recess to facilitate starting. 4,368,013, Cl. 418-74.000.

Toray Industries, Incorporated: *See—*
Tada, Kuniyuki; Minomiya, Eiichi; and Inoue, Takehisa, 4,368,339, Cl. 570-202.000.

Torii, Michihiro; Hirukawa, Kohei; Tsuchiya, Ryoji; Urata, Hiroshi; Sasaki, Isamu; and Esaki, Kunio, to Fuji Electrochemical Co., Ltd. H-Type ceramic resonator. 4,368,402, Cl. 310-367.000.

Tosaka, Osamu; Murakami, Yutaka; Ikeda, Shigeho; and Yoshii, Hiroe, to Ajinomoto Company Incorporated. Method for producing L-glutamic acid by fermentation. 4,368,266, Cl. 435-110.000.

Toshiba Electric Equipment Corporation: *See—*
Sato, Kozi; and Kaneko, Tadahiro, 4,368,504, Cl. 362-33.000.

Totani, Shinzo; Kato, Takaaki; Mizuno, Yoshikazu; and Noda, Munetaka, to Nippondenso Co., Ltd. Governing control apparatus for automobiles. 4,367,805, Cl. 180-179.000.

Toth, John E., to Cubic Western Data. Ticket stock feed and shear system. 4,367,666, Cl. 83-203.000.

Toth, Jozsef: *See—*
Boor nee Mezei, Anna; Toth, Jozsef; Szen, Tamas; Gabor, Laszlo; Major nee Fastner, Piroska; and Holly, Sandor, 4,368,160, Cl. 260-397.400.

Toth, Verona: *See—*
Szucs, Laszlo; Horvath, Andras; Sigmond, Emod; Szabo, Imre; and Toth, Verona, 4,367,595, Cl. 34-27.000.

Tournut, Claude, to Produits Chimiques Ugine Kuhlmann. Process for providing a polytetrafluoroethylene coating on the walls of a metal body. 4,368,217, Cl. 427-181.000.

Toyo Kagaku Kabushiki Kaisha: *See—*
Asakura, Hiroshi; Kusaka, Masaharu; Hirata, Mituto; and Machihara, Akio, 4,368,088, Cl. 156-143.000.

Toyoda Koki Kabushiki Kaisha: *See—*
Kikuchi, Makoto; and Kobayashi, Akiyoshi, 4,367,611, Cl. 51-41.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Hamada, Kozo, 4,367,886, Cl. 280-802.000.
Hayashi, Kunihisa; and Moriyama, Masakazu, 4,368,426, Cl. 324-161.000.
Hayashi, Kunihisa; and Moriyama, Masakazu, 4,368,427, Cl. 324-161.000.
Izawa, Minoru; Takeda, Nobuhiro; and Nakano, Tasuku, 4,368,393, Cl. 307-115.000.
Kitamura, Kazuhiko; Nonoyama, Takao; and Okumura, Atsuo, 4,368,366, Cl. 200-83.00Q.

Miyoshi, Takeo; Nagai, Takanori; and Ii, Akira, 4,367,720, Cl. 123-571.000.
Suzuki, Makoto, 4,367,707, Cl. 123-306.000.
Trachsler, Dieter: *See*—
Lohse, Friedrich; and Trachsler, Dieter, 4,368,317, Cl. 528-323.000.
Trowbridge, Darrell L.: *See*—
Karpathian, Kerry; and Trowbridge, Darrell L., 4,367,659, Cl. 74-501.00R.
True Temper Corporation: *See*—
Freilich, Max; and Gulati, Ramesh C., 4,367,682, Cl. 104-17.00A.
Trumper, Fritz-Dieter: *See*—
Richter, Hans-Hugo; and Trumper, Fritz-Dieter, 4,367,653, Cl. 73-861.210.
Trumper, Thomas, to Gewerkschaft Eisenhutte Westfalia. Mineral mining installation with electronic control. 4,367,900, Cl. 299-1.000.
TRW Inc.: *See*—
Schrader, Gustav E., 4,367,782, Cl. 164-137.000.
Tsubaki, Masamitsu: *See*—
Ogihara, Masato; and Tsubaki, Masamitsu, 4,367,693, Cl. 118-674.000.
Tsubouchi, Kaoru; and Funahashi, Akira, to Aisin Seiki Kabushiki Kaisha. Fluid reservoir with cover fastening means. 4,367,824, Cl. 220-326.000.
Tsuchiya, Ryoji: *See*—
Torii, Michihiro; Hirukawa, Kohei; Tsuchiya, Ryoji; Urata, Hiroshi; Sasaki, Isamu; and Esaki, Kunio, 4,368,402, Cl. 310-367.000.
Tsuge, Akihiko: *See*—
Inoue, Hiroshi; Komeya, Katsutoshi; and Tsuge, Akihiko, 4,368,180, Cl. 423-344.000.
Tsukada, Takami: *See*—
Yoshino, Yataro; Tsukada, Takami; Saito, Tadao; and Nozawa, Takamitsu, 4,367,820, Cl. 215-12.00R.
Tsukada, Toshiro; Tsuruoka, Hisashi; and Hara, Michio, to Hitachi Ltd. Analog-to-digital converter. 4,368,457, Cl. 340-347.0AD.
Tsuruoka, Hisashi: *See*—
Tsukada, Toshiro; Tsuruoka, Hisashi; and Hara, Michio, 4,368,457, Cl. 340-347.0AD.
Tuji, Masakatu: *See*—
Iida, Hiroshi; Ohara, Tetuya; and Tuji, Masakatu, 4,367,597, Cl. 34-155.000.
Tung, Chi F.; and Fellows, Benjamin T., to Minnesota Mining and Manufacturing Company. Durable glass elements. 4,367,919, Cl. 350-105.000.
Tung, Chi F.; and Coderre, James C., to Minnesota Mining and Manufacturing Company. Retroflective sheeting. 4,367,920, Cl. 350-105.000.
Tunison, Mafer E.: *See*—
Winter, William E.; Tunison, Mafer E.; and Staubs, David W., 4,368,113, Cl. 208-89.000.
Turner, William D.: *See*—
Sprague, Robert A.; and Turner, William D., 4,367,925, Cl. 350-355.000.
Tweedy of Burnley Limited: *See*—
Tomlinson, David, 4,368,209, Cl. 426-504.000.
Twittenhoff, Hansjoachim: *See*—
Binder, Klaus; Edl, Wolfgang; and Twittenhoff, Hansjoachim, 4,368,311, Cl. 526-317.000.
Tyers, Paul D., to Controlec Limited. Traffic barriers. 4,367,975, Cl. 404-6.000.
Tyler Refrigeration Corporation: *See*—
Ibrahim, Fayez F.; Subera, Elmer J.; and Myers, James E., 4,367,632, Cl. 62-82.000.
Tyre Mfg. Co., Inc.: *See*—
Warwick, Charles H., 4,367,614, Cl. 52-455.000.
Ube Industries, Ltd.: *See*—
Nakano, Tsunetomo; Nishio, Kazuaki; Watanabe, Hiroshi; and Yasuno, Hiroshi, 4,368,300, Cl. 525-531.000.
Ubiiko, Alexandr M.: *See*—
Koshman, Vitaly I.; Petrichenko, Vladimir F.; Gnilitsky, Boris S.; Oborotov, Vyacheslav D.; Ubiiko, Alexandr M.; and Abara, Leonid P., 4,368,443, Cl. 335-138.000.
Ubukata, Kazumi. Contact mechanism for temperature switch using thermal expansion member. 4,368,449, Cl. 337-313.000.
Uchikawa, Sadao: *See*—
Maruyama, Hiromi; Izumi, Masayuki; Uchikawa, Sadao; and Takeda, Renzo, 4,368,171, Cl. 376-217.000.
Ueda, Ikuo; and Kobayshi, Masakazu, to Fujisawa Pharmaceutical Co., Ltd. Processes for preparing 3-cephem compounds. 4,368,325, Cl. 544-16.000.
Uehara, Haruo; Matsumoto, Shigeyuki; Takatori, Yasushi; Ohta, Tokuya; and Matsufuji, Yohji, to Canon Kabushiki Kaisha. Ink jet recording head. 4,368,476, Cl. 346-140.00R.
Uenaka, Kazushige; Kashiwagi, Shinichi; Tahara, Toshiro; Shirasu, Kazuo; Usui, Yoshio; Abe, Akira; Nakagawa, Fumio; and Masuda, Tetsuya, to Fuji Photo Film Co., Ltd. Apparatus for silver recovery during photographic processing. 4,367,941, Cl. 354-324.000.
Uhde GmbH: *See*—
Richter, Hans-Hugo; and Trumper, Fritz-Dieter, 4,367,653, Cl. 73-861.210.
Umeda, Hiroaki: *See*—
Hata, Kunio; Oshima, Kihachiro; Kano, Isao; Matsukura, Norio; Umeda, Hiroaki; Matsui, Motoi; Ashida, Tetsushi; Nishiguchi, Yoichi; and Yasui, Nobushige, 4,368,081, Cl. 134-2.000.
Underwood, Arthur A.; and Radtke, Richard L., to United States Gypsum Company. Joint compound dispenser. 4,367,692, Cl. 118-415.000.
United Kingdom Atomic Energy Authority: *See*—
Causer, Roy, 4,367,998, Cl. 414-4.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Blyth, David A., 4,368,388, Cl. 250-283.000.
United States Gypsum Company: *See*—
Underwood, Arthur A.; and Radtke, Richard L., 4,367,692, Cl. 118-415.000.
United States of America
Air Force: *See*—
Clinard, Glenn G.; Guth, Kenneth C.; Mulhollam, Gail R.; and Volk, Frank J., 4,368,460, Cl. 340-522.000.
Griffin, Warren R., 4,367,961, Cl. 374-46.000.
Villemain, Herbert F., 4,368,086, Cl. 156-93.000.
Army: *See*—
Spielvogel, Bernard F.; McPhail, Andrew T.; and Hall, Iris H., 4,368,194, Cl. 424-185.000
Energy: *See*—
Mangus, James D., 4,367,628, Cl. 60-657.000.
Ward, Ralph C., 4,367,657, Cl. 73-864.610.
Interior: *See*—
Klug, Jerry J., 4,367,950, Cl. 356-338.000.
Navy: *See*—
Davis, Kenneth L., 4,368,479, Cl. 357-5.000.
Ferris, Donald L.; and Rybicki, Robert C., 4,368,006, Cl. 416-140.000.
Sergev, Sergius S.; and Roster, Theodore J., 4,367,845, Cl. 236-21.00R.
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Dijkman, Marcellinus F. H., 4,368,428, Cl. 324-178.000.
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Janisiewicz, Stanley; Levie, Michael M.; and Czebiniak, Andrew J., 4,367,584, Cl. 29-837.000.
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Swetnam, Larry D.; Casada, James H.; and Walton, Linus R., 4,367,621, Cl. 56-10.200.
University of Surrey, The: *See*—
Quilliam, John E. H., 4,368,463, Cl. 340-744.000.
University of Utah Research Foundation: *See*—
Andrade, Joseph D.; and Van Wagenen, Richard, 4,368,047, Cl. 435-4.000.
Uniwersytet Mikolaja Kopernika: *See*—
Tomaszewski, Jerzy; Chmarzynski, Andrzej; and Nowakowski, Rafal, 4,367,985, Cl. 405-264.000.
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Leong, Basil K. J., 4,367,988, Cl. 406-63.000.
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Torii, Michihiro; Hirukawa, Kohei; Tsuchiya, Ryoji; Urata, Hiroshi; Sasaki, Isamu; and Esaki, Kunio, 4,368,402, Cl. 310-367.000.
Ureshino, Kashiro: *See*—
Kawahara, Masakatsu; Amano, Itaru; Nakagawa, Kazuhiko; Fujieda, Yasuhiko; Ureshino, Kashiro; and Asada, Mitsunori, 4,368,015, Cl. 425-29.000.
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Uenaka, Kazushige; Kashiwagi, Shinichi; Tahara, Toshiro; Shirasu, Kazuo; Usui, Yoshio; Abe, Akira; Nakagawa, Fumio; and Masuda, Tetsuya, 4,367,941, Cl. 354-324.000.
USV Pharmaceutical Corporation: *See*—
Huang, Fu-chih, 4,368,201, Cl. 424-272.000.
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Shirasu, Hiroshi; Ogasawara, Akira; and Utagawa, Ken, 4,368,383, Cl. 250-201.000.
Utz, Wolfgang: *See*—
Hilgner, Reinhard; Utz, Wolfgang; and Schroder, Heinrich, 4,367,650, Cl. 73-649.000.
Uwai, Toshihiro: *See*—
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Jacquet, Maurice A., 4,368,365, Cl. 200-11.0TW.
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Mottier, Patrick; and Valette, Serge, 4,367,916, Cl. 350-96.120.
Valimont, James L.; and Kelly, Joseph D., to PPG Industries, Inc. Arrangement of vacuum cups to assemble one or more bent glass sheets with a sheet of flexible interlayer material. 4,368,087, Cl. 156-102.000.
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Andrade, Joseph D.; and Van Wagenen, Richard, 4,368,047, Cl. 435-4.000.
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Varner, Jerry R., to Eastman Kodak Company. Light valve imaging apparatus having improved optical configuration. 4,367,946, Cl. 355-71.000.
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Weinzierl, Klaus; and Tippmer, Kurt, 4,368,103, Cl. 202-99.000.
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Syme, Duncan C., 4,367,725, Cl. 126-77.000.
Vickery, Brian H.; Anik, Shabbir; and Jones, Richard E., to Syntex (U.S.A.) Inc. Methods and compositions for intravaginal contraception. 4,368,186, Cl. 424-78.000.
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Vivitar Corporation: *See*—
Kreitzer, Melvyn H.; and Chen, Muh-fa, 4,367,928, Cl. 350-453.000.
Vlasic, John G.: *See*—
Keller, Gerald H.; Senese, Frank J.; and Vlasic, John G., 4,367,827, Cl. 222-2.000.
VLSI Technology Research Association: *See*—
Mizukami, Koichiro; and Migitaka, Masatoshi, 4,368,230, Cl. 428-203.000.
Vogl, Gerd: *See*—
Mainka, Joachim; and Vogl, Gerd, 4,367,589, Cl. 33-1.00N.
Volf, Leonard A.: *See*—
Burinsky, Stanislav V.; Volf, Leonard A.; and Alexandrov, Sasho P., 4,368,277, Cl. 521-84.000.
Volk, Frank J.: *See*—
Clinard, Glenn G.; Guth, Kenneth C.; Mulhollam, Gail R.; and Volk, Frank J., 4,368,460, Cl. 340-522.000.
von Beckmann, Helmuth: *See*—
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von der Heide, Hans. Apparatus for the excision and removal of blocks of silage. 4,367,855, Cl. 241-283.000.
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Ganz, Alfred; Hartwig, Karl; Jung, Christoph; Schnall, Gunther; Schlick, Erich; and Vossnacke, Jurgen, 4,367,954, Cl. 366-156.000.
Vuokivi, Reima J.: *See*—
Blom, Ingvar G. A.; and Vuokivi, Reima J., 4,367,868, Cl. 266-225.000.
W. R. Grace & Co.: *See*—
O'Rell, Dennis D.; and Lin, Nan J., 4,368,243, Cl. 429-147.000.
Waagner-Biro Aktiengesellschaft: *See*—
Hillinger, Bruno; and Bechmann, Georg, 4,367,598, Cl. 34-164.000.
Wacker-Chemie GmbH: *See*—
Deubzer, Bernward; Esterbauer, Josef; Solbrig, Christian; and Frey, Volker, 4,368,294, Cl. 525-100.000.
Kurz, Dieter, 4,368,306, Cl. 526-125.000.
Wada, Tooru: *See*—
Yamauchi, Junichi; Masuhara, Eiichi; Nakabayashi, Nobuo; Shibatani, Kyoichiro; and Wada, Tooru, 4,368,043, Cl. 433-217.000.
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Fujiwhara, Mitsuto; Matsuo, Syunji; Wada, Tsuneo; Abe, Naoto; Masukawa, Toyoaki; Iijima, Akio; and Oishi, Keiji, 4,368,258, Cl. 430-493.000.
Wadsworth, Donald H.: *See*—
Fletcher, George L., Jr.; Bender, Steven L.; and Wadsworth, Donald H., 4,368,247, Cl. 430-17.000.
Wagensonner, Eduard: *See*—
Stemme, Otto; and Wagensonner, Eduard, 4,368,484, Cl. 358-41.000.
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Wakui, Tadahiro: *See*—
Tawara, Kinya; Kamiyama, Hiroki; Nakashizu, Shigenori; Kaneko, Takashi; Wakui, Tadahiro; and Matsumoto, Tadashi, 4,368,337, Cl. 568-613.000.
Walcher, Wilhelm, to Karl Kassbohrer Fahrzeugwerke GmbH. Closure member for vehicles. 4,367,780, Cl. 160-213.000.
Wall, Erich, to Sulzer Brothers Limited. Nozzle assembly for a weaving machine. 4,367,772, Cl. 139-435.000.
Walliser, Konrad: *See*—
Martin, Erwin; and Walliser, Konrad, 4,368,401, Cl. 310-324.000.
Walser, Armin; and Fryer, Rodney I., to Hoffmann-La Roche Inc. Intermediates to produce imidazodiazepines. 4,368,157, Cl. 260-239.0BD.
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Walter, Lothar: *See*—
Olschewski, Armin; Brandenstein, Manfred; and Walter, Lothar, 4,367,904, Cl. 384-95.000.
Walters, Armon J. Dispensing system for porous floor containers. 4,367,987, Cl. 406-15.000.
Walton, Linus R.: *See*—
Swetnam, Larry D.; Canada, James H.; and Walton, Linus R., 4,367,621, Cl. 56-10.200.
Walton, William B., Jr. Antenna ice removal and prevention apparatus. 4,368,471, Cl. 343-704.000.
Wank, Joachim: *See*—
Egert, Karl-Heinz; Wank, Joachim; and Reese, Eckart, 4,368,231, Cl. 428-220.000.
Ward, Ralph C., to United States of America, Energy. Sludge sampler. 4,367,657, Cl. 73-864.610.
Warner-Lambert Company: *See*—
Link, William T.; Haney, Jerry D.; and Jansen, William, 4,367,751, Cl. 128-682.000.
Warrick, Patricia P.: *See*—
Flom, Merlyn G.; Herrold, Anne M.; Martin, Joe O.; Mentlik, Anton A.; and Warrick, Patricia P., 4,368,187, Cl. 424-81.000.
Warwick, Charles H., to Tyre Mfg. Co., Inc. Fire endurance door. 4,367,614, Cl. 52-455.000.
Watanabe, Fumio: *See*—
Mitsuhata, Masashi; Watanabe, Fumio; and Kumazawa, Toshihiko, 4,368,144, Cl. 252-463.000.
Watanabe, Hiroshi: *See*—
Nakano, Tsunetomo; Nishio, Kazuaki; Watanabe, Hiroshi; and Yasuno, Hiroshi, 4,368,300, Cl. 525-531.000.
Watanabe, Katsuyoshi; Andoh, Makoto; Saito, Yasuhisa; Maeda, Yasuteru; and Fukuyama, Yoshiya, to Sumitomo Chemical Company, Limited. Epoxy resin compositions. 4,368,299, Cl. 525-481.000.
Watanabe, Kazuo; and Makabe, Hahiro, to Janome Sewing Machine Co., Ltd. Pulse motor driving device of sewing machines. 4,368,414, Cl. 318-696.000.
Waterhouse, John S.: *See*—
Green, George E.; and Waterhouse, John S., 4,368,253, Cl. 430-326.000.
Watkins, Hugh: *See*—
Licciardello, Michael; Boden, Richard M.; Watkins, Hugh; and Hanna, Marie R., 4,368,145, Cl. 252-522.00R.
Watson, Edwin B., to Bendix Corporation, The. Distribution injection pump for diesel engines. 4,367,715, Cl. 123-458.000.
Wattron, Albert: *See*—
Aron, Jerome; Quirin, Michel; and Wattron, Albert, 4,367,622, Cl. 56-364.000.
Wauer, Gerd; Becker, Dietmar; and Schonthaler, Rubi, to Pfaff Industriemaschinen GmbH. Industrial robot with a gripping mechanism. 4,367,891, Cl. 294-88.000.
Wavetek Indiana, Inc.: *See*—
Reuter, Anthony W., 4,368,437, Cl. 331-2.000.
Wavin B.V.: *See*—
Budel, Eduard J.; Fehrmann, Heinrich; and de Kok, Johan, 4,368,026, Cl. 425-466.000.
Wayman, Morris: *See*—
Pierce, Sammy M.; and Wayman, Morris, 4,368,056, Cl. 44-53.000.
Webco Industrial Rubber Limited: *See*—
Speirs, Graeme K.; and Cameron, Anthony D., 4,367,571, Cl. 24-249.00R.
Weber, Meyer M.; and Shovers, John, to Midwest Biochemical Corp. Process for the recovery of enzyme coagulants. 4,368,270, Cl. 435-226.000.
Webley and Scott Limited: *See*—
Resuggan, Harold F., 4,367,723, Cl. 124-67.000.
Wedler, Herbert, to Mannesmann Aktiengesellschaft. Ship S drive system. 4,368,048, Cl. 440-75.000.

Weeks, Paul D.: *See*—
Brennan, Thomas M.; Brannegan, Daniel P.; Kuhla, Donald E.; and Weeks, Paul D., 4,368,331, Cl. 549-417.000.

Weinzierl, Klaus; and Tippmer, Kurt, to Vereinigte Elektrizitats-Werke Westfalen AG; and Carl Still GmbH & Co. KG, Firma. Coal carbonization and/or gasification plant. 4,368,103, Cl. 202-99.000.

Weiser, Martin, to Strabag Bau-AG. Anchorage devices for a tension wire bundle of tension wires. 4,367,568, Cl. 24-122.600.

Weissman, Bernard, to Ipco Corporation. Dental impression tray for forming a dental prosthesis in situ. 4,368,040, Cl. 433-36.000.

Welage, Norbert A., to Minnesota Mining and Manufacturing Company. Conformable electrically conductive compositions. 4,367,745, Cl. 128-303.130.

Welty, Joseph M., to Branson International Plasma Corporation. Power supply and method utilizing applied current for increased hysteresis swing in transformer core. 4,368,419, Cl. 323-239.000.

Weresch, Thomas. Apparatus for cutting to size and bending leads of electrical components. 4,367,775, Cl. 140-105.000.

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Beanland, Neill S., 4,367,974, Cl. 404-5.000.

Western Electric Company, Inc.: *See*—
Elliott, William A.; and Taylor, Thomas J., 4,367,585, Cl. 29-857.000.

Westinghouse Electric Corp.: *See*—
Conroy, Ernest F., Jr.; and Elms, Robert T., 4,368,500, Cl. 361-94.000.
Hwang, Eddie Y.; Szabo, Andras I.; and Ottobre, Louis G., 4,368,520, Cl. 364-494.000.
Lisle, Hampton H.; and DeMartino, Kevin, 4,368,468, Cl. 343-16.00M.
Logan, Dale R.; and Buckley, John J., 4,367,913, Cl. 350-500.000.
Miller, Robert C., 4,368,424, Cl. 324-142.000.
Soroka, Daniel P., 4,367,992, Cl. 409-264.000.
Ying, Sui-Chun; and Litz, Donald C., 4,368,399, Cl. 310-270.000.

Westley, John: *See*—
Liu, Chao-Min; Prosser, Barbara; and Westley, John, 4,368,265, Cl. 435-75.000.

Whidden, Glenn H. Transmitter detector. 4,368,539, Cl. 455-166.000.

Whitaker, Dewey R.: *See*—
Brummett, Charles R.; Crumley, J. A.; Shaak, Ray N.; and Whitaker, Dewey R., 4,368,281, Cl. 523-458.000.

Whittaker, Raymond A.; Lukaszewicz, Raymond; and Ford, John A., to Coal Industry (Patents) Limited. Holder assemblies for sensitized cutter tools on mining machines. 4,367,899, Cl. 299-1.000.

Whitworth, Loraine T. Pattern drafting tool. 4,367,593, Cl. 33-174.00N.

Whybrew, Walter D.: *See*—
Bucovaz, Edsel T.; Whybrew, Walter D.; and Morrison, John C., 4,368,262, Cl. 435-23.000.

Wieland, Dieter; and Merz, Walter, to Andreas Stihl. Mechanism to control power chain saw clutch operation. 4,367,813, Cl. 192-17.00R.

Wiesert, Loser & Sohn GmbH & Co.: *See*—
Zoller, Roland, 4,368,016, Cl. 425-94.000.

Wiget, Fridolin, to Ebauches, S.A. Pseudo-analog display device. 4,367,959, Cl. 368-240.000.

Wilkes, Kenneth R. Tear strip for gas sterilizable package and package. 4,367,816, Cl. 206-439.000.

Wilkus, Joseph R.: *See*—
Bitsky, Thomas C.; and Wilkus, Joseph R., 4,368,052, Cl. 493-96.000.

Willett, Paul E. Baker's ovens. 4,367,724, Cl. 126-20.000.

Williams, Dwight E., to Outboard Marine Corporation. Vehicle steering system. 4,367,881, Cl. 280-96.000.

Williams, Joel L.: *See*—
Dudley, Betty J., deceased; and Williams, Joel L., 4,367,749, Cl. 128-637.000.

Williams, Raymond S.; and Fisher, Paul C., to Fisher, Paul C. Erasable ink for ball point pens comprising trifluoroethylene and vinyl acetate polymers. 4,367,966, Cl. 401-190.000.

Wilson, Gerald E., to Carpools Environmental Protection Services Limited. Apparatus for continuous treatment of mixtures. 4,368,119, Cl. 210-137.000.

Wilson, Norman H.: *See*—
Jones, Robert L.; and Wilson, Norman H., 4,368,332, Cl. 560-120.000.

Winant, Daniel. Portable fabric shelter. 4,367,761, Cl. 135-87.000.

Windings, Inc.: *See*—
Kotzur, Frank W., 4,367,853, Cl. 242-163.000.

Windstey, Friedrich. Clockwork of an electric quartz clock. 4,367,956, Cl. 368-88.000.

Winter, Craig R.; Bird, Stanley M., Sr.; and Presba, Keneth E. Calibrated tape for use in constructing wall with vertical studs. 4,367,590, Cl. 33-137.00R.

Winter, William E.; Tunison, Mafer E.; and Staubs, David W., to Exxon Research and Engineering Co. Hydrocarbon hydrocracking process. 4,368,113, Cl. 208-89.000.

Winter, William L. Inspection hole cover for coke oven. 4,368,104, Cl. 202-248.000.

Wittren, Richard A., to Deere & Company. Steering system. 4,367,803, Cl. 180-153.000.

Witzel, Lothar. Pneumatic dilatator for introdution into the esophagus. 4,367,747, Cl. 128-344.000.

Wolf, Reinhold: *See*—
Bauer, Karl-Heinz; Eckert, Gerold; and Wolf, Reinhold, 4,368,441, Cl. 334-15.000.

Womako Maschinenkonstruktionen GmbH: *See*—
Fabrig, Paul, 4,367,815, Cl. 198-374.000.

Wood, John F. B.; Platek, Stanley W.; O'Kane, Joseph C.; and Ackel, Gary P., to Hazelett Strip-Casting Corporation. Method and apparatus for continuous casting of metal under controlled load conditions. 4,367,783, Cl. 164-452.000.

Woodling, George V. Cylindrical tooth set having a concave socket and a cylindrical tooth engaging each other on the transverse line of eccentricity. 4,368,011, Cl. 418-61.00B.

Woodling, George V. Fluid pressure assembly having a valve disk member with identical flat sides. 4,368,012, Cl. 418-61.00B.

Worbois, Robert J., to American Standard Inc. System for automatically delaying application of a snow brake for a railway vehicle. 4,367,903, Cl. 303-13.000.

Wordex: *See*—
Daughters, James R., 4,367,963, Cl. 400-208.000.

Wroblewski, Theodore, to Frequency Technology, Inc. Inductor-capacitor impedance devices and method of making the same. 4,368,407, Cl. 315-291.000.

Wunsch, Erich, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Peptides. 4,368,192, Cl. 424-177.000.

Wuthrich, Hans-Rudolf: *See*—
Roth, Adrian W.; and Wuthrich, Hans-Rudolf, 4,368,367, Cl. 200-148.00A.

Wyrsch, Dieter: *See*—
Mollet, Herbert; and Wyrsch, Dieter, 4,368,256, Cl. 430-359.000.

Xerox Corporation: *See*—
Sprague, Robert A.; and Turner, William D., 4,367,925, Cl. 350-355.000.

Yakamizawa, Yuji: *See*—
Fujiyama, Susumu; Matsumoto, Shunichi; and Yakamizawa, Yuji, 4,368,336, Cl. 568-428.000.

Yamabe, Masaaki; Kodama, Shun-ichi; and Kojima, Gen, to Asahi Glass Company, Ltd. Fluorine-containing elastomer having excellent low temperature resistance and oil resistance. 4,368,308, Cl. 526-247.000.

Yamada, Hirotada; Nakagome, Takenari; and Komatsu, Toshiaki, to Sumitomo Chemical Company Limited. Cephalosporins. 4,368,198, Cl. 424-246.000.

Yamada, Yasuyuki; Kitamoto, Tatsuji; and Akashi, Goro, to Fuji Photo Film Co., Ltd. Process for producing magnetic recording device. 4,368,237, Cl. 428-413.000.

Yamaguchi, Hisashi: *See*—
Unotoro, Tomoyuki; Tanikawa, Kunihiro; Kurahashi, Keizo; Yamaguchi, Hisashi; Ito, Yuichiro; and Miyamoto, Yoshihiro, 4,368,467, Cl. 340-799.000.

Yamaguchi, Kohmei; Kobayashi, Kazuo; and Furukawa, Takeo, to Fujitsu Limited. Mercury switch. 4,368,442, Cl. 335-57.000.

Yamamoto, Kenji: *See*—
Kurosawa, Keiji; Yamamoto, Kenji; Yamashita, Mitsuo; Mitsui, Hisami; Miyabara, Ayako; Miyagawa, Kiyotaka; and Imura, Takayoshi, 4,368,503, Cl. 361-414.000.

Yamamoto, Shinichi: *See*—
Naito, Junichiro; Yamamoto, Shinichi; Suzuki, Zituo; and Asano, Mitsuru, 4,368,025, Cl. 425-462.000.

Yamamoto, Tetsuro: *See*—
Tawada, Yoshihisa; Ushioda, Minoru; Yamamoto, Tetsuro; and Hatano, Itaru, 4,368,284, Cl. 524-230.000.

Yamanouchi, Hideki: *See*—
Hayashi, Masahiro; Yoshimura, Tamotsu; Mukai, Seiichi; Shikama, Masaharu; Kusumoto, Hideto; and Yamanouchi, Hideki, 4,368,286, Cl. 524-394.000.

Yamashita, Izumi; and Fukuda, Kunio, to Asahi-Dow Limited. Polyphenylene ether compositions. 4,368,293, Cl. 525-68.000.

Yamashita, Mitsuo: *See*—
Kurosawa, Keiji; Yamamoto, Kenji; Yamashita, Mitsuo; Mitsui, Hisami; Miyabara, Ayako; Miyagawa, Kiyotaka; and Imura, Takayoshi, 4,368,503, Cl. 361-414.000.

Yamauchi, Junichi; Masuhara, Eiichi; Nakabayashi, Nobuo; Shibatani, Kyoichiro; and Wada, Tooru, to Kuraray Company, Limited. Adhesive cementing agents for the hard tissues of the human body. 4,368,043, Cl. 433-217.000.

Yamauchi, Masamichi: *See*—
Kawahara, Hisashi; Hanaoka, Tadashi; and Yamauchi, Masamichi, 4,367,958, Cl. 368-188.000.

Yamazaki, Etsuo: *See*—
Imazeki, Ryoji; Yamazaki, Etsuo; and Sasaki, Takao, 4,368,433, Cl. 328-30.000.

Yanagiako, Hiroshi; Kanai, Toshio; Kogawa, Yoshio; Yoshida, Michihiro; Mashino, Zenji; Shimizu, Shin-ichi; Sugiya, Teruo; and Onozaki, Masaki, to Chiyoda Chemical Engineering & Construction Co., Ltd. Gas sparging method. 4,368,060, Cl. 55-73.000.

Yanagihara, Yuzo; Noguchi, Kohji; and Honda, Makoto, to Asahi Kasei Kogyo Kabushiki Kaisha. Isocyanurate-vinyl alcohol-vinyl ester chromatographic packing. 4,368,275, Cl. 521-52.000.

Yardney Electric Corporation: *See*—
Berchielli, Aldo S., 4,368,167, Cl. 264-104.000.

Yasuda, Hyo: *See*—
Mori, Kenzo; Yasuda, Hyo; and Koshi, Masaru, 4,368,470, Cl. 343-113.00R.

Yasuhara, Seishi, to Nissan Motor Company, Limited. Fuel injection timing control system. 4,367,716, Cl. 123-478.000.

Yasui, Nobushige: *See*—
Hata, Kunio; Oshima, Kihachiro; Kano, Isao; Matsukura, Norio; Umeda, Hiroaki; Matsui, Motoi; Ashida, Tetsushi; Nishiguchi, Yoichi; and Yasui, Nobushige, 4,368,081, Cl. 134-2.000.

Yasuno, Hiroshi: *See*—
Nakano, Tsunetomo; Nishio, Kazuaki; Watanabe, Hiroshi; and Yasuno, Hiroshi, 4,368,300, Cl. 525-531.000.

Yatsenko, Sergei P.: *See*—
Rubinshtein, Georgy M.; Yatsenko, Sergei P.; Diev, Valery N.; Zlokazova, Tatyana M.; Fomin, Eduard S.; Moskov, Ruslan N.; Grigorieva, Anastasia D.; Davydov, Ivan V.; Starkov, Evgeny N.; Ovsyannikov, Vladimir I.; Eremeev, Arnold F.; and Lavreschuk, Vladimir N., 4,368,108, Cl. 204-43.00R.

Yeda Research and Development Co. Ltd.: *See*—
Manassen, Joost; Cahen, David; and Hodes, Gary, 4,368,216, Cl. 427-74.000.

Ying, Sui-Chun; and Litz, Donald C., to Westinghouse Electric Corp. Rotor end turn winding and support structure. 4,368,399, Cl. 310-270.000.

Ymker, Lucas; and Hoogendijk, Christiaan J., to Altometer, Product-iebedrijf Van Rheometron A.G. Device for measuring the flow velocity of fluids. 4,367,654, Cl. 73-861.290.

Yokomichi, Isao: *See*—
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Shigehara, Itaru; and Miyaji, Mikio, 4,368,340, Cl. 570-207.000.

Yoneda, Kenji; Sakata, Kazuhiro; Yuminaka, Takeo; Nakazato, Masao; Kurihara, Tomiaki; Kuzunuki, Soshiro; and Katayama, Yasunori, to Hitachi, Ltd. Elevator control system. 4,367,811, Cl. 187-29.00R.

York, George L.: *See*—
Fitzgerald, John B.; and York, George L., 4,367,764, Cl. 137-115.000.

Yoshida, Kimiyoshi: *See*—
Sakano, Akio; Shikakura, Kunio; Tamaru, Hideshi; and Yoshida, Kimiyoshi, 4,368,528, Cl. 369-136.000.

Yoshida, Michihiro: *See*—
Yanagiako, Hiroshi; Kanai, Toshio; Kogawa, Yoshio; Yoshida, Michihiro; Mashino, Zenji; Shimizu, Shin-ichi; Sugiya, Teruo; and Onozaki, Masaki, 4,368,060, Cl. 55-73.000.

Yoshida, Syozo; and Saito, Syuichiro, to Canon Kabushiki Kaisha. Electromagnetically driven shutter. 4,367,938, Cl. 354-234.000.

Yoshida, Takao: *See*—
Light, Kenneth K.; McGhie, Joseph A.; Fujioka, Futoshi; and Yoshida, Takao, 4,368,128, Cl. 252-8.900.

Yoshida, Tomio: *See*—
Harigae, Shunji; Yoshida, Tomio; Nakata, Yoshinobu; Nagashima, Michiyoshi; and Sato, Toshio, 4,368,526, Cl. 369-45.000.

Yoshida, Toshio, to Kawasaki Jukogyo Kabushiki Kaisha. Method of producing clad steel articles. 4,367,838, Cl. 228-112.000.

Yoshii, Hiroe: *See*—
Tosaka, Osamu; Murakami, Yutaka; Ikeda, Shigeho; and Yoshii, Hiroe, 4,368,266, Cl. 435-110.000.

Yoshimura, Tamotsu: *See*—
Hayashi, Masahiro; Yoshimura, Tamotsu; Mukai, Seiichi; Shikama, Masaharu; Kusumoto, Hideto; and Yamanouchi, Hideki, 4,368,286, Cl. 524-394.000.

Yoshino Kogyosho Co., Ltd.: *See*—
Yoshino, Yataro; Tsukada, Takami; Saito, Tadao; and Nozawa, Takamitsu, 4,367,820, Cl. 215-12.00R.

Yoshino, Yataro; Tsukada, Takami; Saito, Tadao; and Nozawa, Takamitsu, to Yoshino Kogyosho Co., Ltd. Saturated polyester resin bottle and stand. 4,367,820, Cl. 215-12.00R.

Yoshioka, Hiroshi: *See*—
Nakajima, Kaoru; Somezawa, Masashi; Takamizawa, Minoru; Inoue, Yoshio; and Yoshioka, Hiroshi, 4,368,242, Cl. 428-447.000.

Young, Walter M.: *See*—
Shatto, Walter C., Jr.; and Young, Walter M., 4,367,909, Cl. 339-176.0MF.

Young, Wendell M. Safety lift and tie-down apparatus for portable elevators and the like. 4,367,814, Cl. 198-301.000.

Yuasa, Yoshio: *See*—
Ishikawa, Norio; Taniguchi, Nobuyuki; and Yuasa, Yoshio, 4,367,932, Cl. 354-23.00D.

Yui, Hiroshi; Kakizaki, Tetsuji; Nishiya, Yashinori; and Horie, Shinji, to Mitsubishi Petrochemical Company, Ltd. Partially cross-linkable compositions and process for preparing partially cross-linked thermoplastic elastomers. 4,368,280, Cl. 523-211.000.

Yuminaka, Takeo: *See*—
Yoneda, Kenji; Sakata, Kazuhiro; Yuminaka, Takeo; Nakazato, Masao; Kurihara, Tomiaki; Kuzunuki, Soshiro; and Katayama, Yasunori, 4,367,811, Cl. 187-29.00R.

Z-L Limited Partnership: *See*—
Zilliken, Fritz W., 4,368,264, Cl. 435-52.000.

Zabler, Erich: *See*—
Herden, Werner; Hochenberger, Hans-Martin; Neu, Hans; Seidel, Hans-Joachim; Pfander, Werner; Gruner, Heiko; Zabler, Erich; Pilch, Claus-Dietrich; and Linn, Karl-Otto, 4,368,453, Cl. 338-25.000.

Zahnradfabrik Friedrichshafen, AG: *See*—
Elser, Dieter, 4,367,672, Cl. 91-375.00A.

Zapfe, Helmut H.: *See*—
Blegen, James R.; Zapfe, Helmut H.; and Bulgozdy, Eugene L., 4,368,222, Cl. 427-340.000.

Zech, Bernd: *See*—
Rentzea, Costin; Feuerherd, Karl-Heinz; Zech, Bernd; and Jung, Johann, 4,368,066, Cl. 71-76.000.

Zenith Radio Corporation: *See*—
Midland, Richard W., 4,368,485, Cl. 358-64.000.

Ziaylek, Theodore, Jr. Nozzle bracket mount. 4,367,858, Cl. 248-75.000.

Zielenski, Anthony L. Elastic clamping apparatus. 4,367,572, Cl. 24-301.000.

Zilliken, Fritz W., to Z-L Limited Partnership. Fermentation methods of preparing ergostadientriols. 4,368,264, Cl. 435-52.000.

Zimmer, Scott E., to Summagraphics Corporation. Amplitude modulated digitizer. 4,368,351, Cl. 178-19.000.

Zlokazova, Tatyana M.: *See*—
Rubinshtein, Georgy M.; Yatsenko, Sergei P.; Diev, Valery N.; Zlokazova, Tatyana M.; Fomin, Eduard S.; Moskov, Ruslan N.; Grigorieva, Anastasia D.; Davydov, Ivan V.; Starkov, Evgeny N.; Ovsyannikov, Vladimir I.; Eremeev, Arnold F.; and Lavreschuk, Vladimir N., 4,368,108, Cl. 204-43.00R.

Zoeller, Robert: *See*—
Dubuc, Emile; Bourgeois, Maurice; May, Stanley; and Zoeller, Robert, 4,367,831, Cl. 226-14.000.

Zoller, Roland, to Wiesert, Loser & Sohn GmbH & Co. Apparatus for feeding a candy filling forced out of a conveyor into a rod forming apparatus. 4,368,016, Cl. 425-94.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 11TH DAY OF JANUARY, 1983

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bacsanyi, Thomas J.; Harmon, Edward J., deceased (by Harmon, Patricia, joint personal representative); and by National Bank of Detroit, joint personal representative, to Ransburg Corporation. Imbalance determining apparatus and method. Re. 31,120, Cl. 73-483.000.

Centron Corporation: *See*—
Simmons, Billy P., Re. 31,123, Cl. 285-334.000.

Dresser Industries, Inc.: *See*—
Fertl, Walter H.; and Vaello, Donald B., Re. 31,122, Cl. 166-254.000.

Fertl, Walter H.; and Vaello, Donald B., to Dresser Industries, Inc. Method for ascertaining optimum location for well stimulation and/or perforation. Re. 31,122, Cl. 166-254.000.

Harmon, Edward J., deceased: *See*—
Bacsanyi, Thomas J.; Harmon, Edward J., deceased; and National Bank of Detroit, joint personal representative, Re. 31,120, Cl. 73-483.000.

Harmon, Patricia, joint personal representative: *See*—
Bacsanyi, Thomas J.; Harmon, Edward J., deceased; and National Bank of Detroit, joint personal representative, Re. 31,120, Cl. 73-483.000.

Jongetjes, Hendrik, to Koninklijke Papierfabrieken Van Gelder Zonen N.V. Reinforced plastics carrier for printed circuits. Re. 31,124, Cl. 162-156.000.

Koninklijke Papierfabrieken Van Gelder Zonen N.V.: *See*—
Jongetjes, Hendrik, Re. 31,124, Cl. 162-156.000.

National Bank of Detroit, joint personal representative: *See*—
Bacsanyi, Thomas J.; Harmon, Edward J., deceased; and National Bank of Detroit, joint personal representative, Re. 31,120, Cl. 73-483.000.

Parker-Hannifin Corporation: *See*—
Reinicke, Robert H., Re. 31,121, Cl. 137-493.000.

Ransburg Corporation: *See*—
Bacsanyi, Thomas J.; Harmon, Edward J., deceased; and National Bank of Detroit, joint personal representative, Re. 31,120, Cl. 73-483.000.

Reinicke, Robert H., to Parker-Hannifin Corporation. Control device for prosthetic urinary sphincter cuff. Re. 31,121, Cl. 137-493.000.

Simmons, Billy P., to Centron Corporation. Pipe section and coupling. Re. 31,123, Cl. 285-334.000.

Vaello, Donald B.: *See*—
Fertl, Walter H.; and Vaello, Donald B., Re. 31,122, Cl. 166-254.000.

LIST OF DESIGN PATENTEES

Allgood, Charles H., II. Plaque. 267,556, 1-11-83, Cl. D11-133.000.

Ambrosio, Thomas J.; Buchman, Henry J.; Rogus, Joseph J.; and Sochon, Henry R., to Schering Corporation. Plunger rod/needle protector for a hypodermic syringe. 267,587, 1-11-83, Cl. D24-25.000.

American Can Company: *See*—
Nemura, Dennis J.; and Wathen, John M., Jr., 267,543, Cl. D9-428.000.

Argandona, Augusto, to Quaker Oats Company, The. Toy airport. 267,570, 1-11-83, Cl. D21-118.000.

Ban, Koichiro; Kawashima, Tsunemi; and Shimizu, Toshiharu, to Yamaha Hatsudoki Kabushiki Kaisha. Motorcycle. 267,561, 1-11-83, Cl. D12-110.000.

Barthropp, Francis M. L. Toy water gun. 267,574, 1-11-83, Cl. D21-147.000.

Bluestein, Bernard B.: *See*—
Steinkamp, Norman A.; Thomas, Richard K.; and Bluestein, Bernard B., 267,538, Cl. D7-386.000.

Borer, James M. Fluid dispensing spoon. 267,537, 1-11-83, Cl. D7-141.000.

Breneman, Jack L., to Quaker Oats Company, The. Toy boat rig. 267,573, 1-11-83, Cl. D21-135.000.

Brescia, Anthony J.; and Rhoads, Spencer, to Syroco, Inc. Storage unit. 267,529, 1-11-83, Cl. D6-131.000.

Bressler, Peter; Cicero, David A.; Kiefer, Udo; and Citerone, Robert E., to Siemens Corporation. Engine analyzer. 267,553, 1-11-83, Cl. D10-75.000.

Briggs & Stratton Corporation: *See*—
Stevens, Kipp K., 267,558, Cl. D12-91.000.

Brun, George F., Jr.: *See*—
Ogg, Elmer E., Jr.; Brun, George F., Jr.; and Wells, William E., 267,594, Cl. D34-22.000.

Buchman, Henry J.: *See*—
Ambrosio, Thomas J.; Buchman, Henry J.; Rogus, Joseph J.; and Sochon, Henry R., 267,587, Cl. D24-25.000.

Carlson, Ann. Indian doll. 267,575, 1-11-83, Cl. D21-182.000.

Carlson, Ann. Indian doll. 267,576, 1-11-83, Cl. D21-182.000.

Carlson, Ann. Indian doll. 267,577, 1-11-83, Cl. D21-182.000.

Carlson, Ann. Indian doll. 267,578, 1-11-83, Cl. D21-182.000.

Casio Computer Co., Ltd.: *See*—
Wada, Masao, 267,548, Cl. D10-38.000.

Chritton, Thomas. Hat. 267,518, 1-11-83, Cl. D2-251.000.

Cicero, David A.: *See*—
Bressler, Peter; Cicero, David A.; Kiefer, Udo; and Citerone, Robert E., 267,553, Cl. D10-75.000.

Citerone, Robert E.: *See*—
Bressler, Peter; Cicero, David A.; Kiefer, Udo; and Citerone, Robert E., 267,553, Cl. D10-75.000.

Cohen, Piet, to Materias Plasticas, Limitada. Soap holder. 267,527, 1-11-83, Cl. D6-90.000.

Cohen, Piet, to Materias Plasticas, Limitada. Combined tumbler and toothbrush holder. 267,528, 1-11-83, Cl. D6-92.000.

Cox, Morris E. Wrist pen holder. 267,555, 1-11-83, Cl. D11-2.000.

Crawford, Brian F.; and Jaros, Philip, to White Mop Wringer Company. Leaf bag holder. 267,593, 1-11-83, Cl. D34-01.000.

Crown Zellerbach Corporation: *See*—
Main, Thomas H., 267,520, Cl. D3-30.100.

Duskin Franchise Kabushiki Kaisha: *See*—
Yamazaki, Ken; Yamamoto, Yosuki; Kinoyama, Takehisa; and Sasagawa, Kinichi, 267,535, Cl. D6-219.000.

Edwards, Ralph: *See*—
Payne, C. Lee, Jr.; and Snoke, Phillip J., 267,592, Cl. D32-74.000.

Erickson, David J. Belt mounted game carrier. 267,519, 1-11-83, Cl. D2-400.000.

Eutectic Corporation: *See*—
Neto, Oscar T.; Migliano, Joao E. B.; and Fluckiger, Jean L., 267,544, Cl. D9-431.000.

Figuered, Earl S. Soap holder. 267,526, 1-11-83, Cl. D6-90.000.

Findlay, James R., to Impact Products, Inc. Combined scoop, funnel, and pourer. 267,536, 1-11-83, Cl. D7-318.000.

Fluckiger, Jean L.: *See*—
Neto, Oscar T.; Migliano, Joao E. B.; and Fluckiger, Jean L., 267,544, Cl. D9-431.000.

Fossella, Gregory; MacDonald, J. B.; and Mercandante, Michael, to Nashua Corporation. Document feeder for copying machine. 267,565, 1-11-83, Cl. D16-32.000.

Gamescience, Inc.: *See*—
Polite, Clifford E., 267,569, Cl. D21-41.000.

General Motors Corporation: *See*—
Palmer, Jerry P.; and Wittine, Randolph J., 267,562, Cl. D12-211.000.
Wright, Dennis S., 267,564, Cl. D12-211.000.

Gibson, Thomas E. V-Shaped ceramic greenware cleaner. 267,591, 1-11-83, Cl. D32-52.000.

Goodell, David. Pyramid greenhouse. 267,588, 1-11-83, Cl. D25-15.000.

Goshi Kaisha Kanemitsu Doko Yosetsu-sho: *See*—
Kanemitsu, Yukio, 267,540, Cl. D8-360.000.

Goshi Kaisha Kanemitsu Dosho Yosetsu-Sho: *See*—
Kanemitsu, Yukio, 267,541, Cl. D8-360.000.

Hall & Keane Design Limited: *See*—
Varma, Kumar, 267,590, Cl. D27-51.000.
Hatlen, Roger A. Dental mouth prop. 267,586, 1-11-83, Cl. D24-10.000.
Hauser, Billy G., to Poland Manufacturing Corporation. Wheeled lever. 267,595, 1-11-83, Cl. D34-34.000.
Hayashi, Masakazu, to Kabushiki Kaisha Hayashi Racing. Vehicle wheel. 267,563, 1-11-83, Cl. D12-211.000.
Hickey, Larry G., to Tropitone Furniture Co., Inc. Settee. 267,524, 1-11-83, Cl. D6-63.000.
Hilker, Gloria D. Built-in fireplace unit. 267,584, 1-11-83, Cl. D23-94.000.
Hodgson, Roy G.: *See*—
Smyth, Norman L.; and Hodgson, Roy G., 267,550, Cl. D10-62.000.
Hoffman, Robert C., to Qwint Systems, Inc. Inked tape cartridge. 267,566, 1-11-83, Cl. D18-12.000.
Impact Products, Inc.: *See*—
Findlay, James R., 267,536, Cl. D7-318.000.
Interdica S.A.: *See*—
Kanoui, Joseph, 267,549, Cl. D10-39.000.
Jaros, Philip: *See*—
Crawford, Brian F.; and Jaros, Philip, 267,593, Cl. D34-01.000.
Johnson, Allan B.: *See*—
Mackay, Spencer L.; Mackay, Frederick G.; Johnson, Allan B.; and Smith, David W., 267,581, Cl. D23-35.000.
Mackay, Spencer L.; Mackay, Frederick G.; Johnson, Allan B.; and Smith, David W., 267,582, Cl. D23-35.000.
Kabushiki Kaisha Hayashi Racing: *See*—
Hayashi, Masakazu, 267,563, Cl. D12-211.000.
Kabushiki Kaisha Suwa Seikosha: *See*—
Mori, Masahiko, 267,567, Cl. D18-22.000.
Kanemitsu, Yukio, to Goshi Kaisha Kanemitsu Doko Yosetsu-sho. Poly-v pulley. 267,540, 1-11-83, Cl. D8-360.000.
Kanemitsu, Yukio, to Goshi Kaisha Kanemitsu Dosho Yosetsu-Sho. Poly-v pulley. 267,541, 1-11-83, Cl. D8-360.000.
Kanoui, Joseph, to Interdica S.A. Watch. 267,549, 1-11-83, Cl. D10-39.000.
Kawashima, Tsunemi: *See*—
Ban, Koichiro; Kawashima, Tsunemi; and Shimizu, Toshiharu, 267,561, Cl. D12-110.000.
Kiefer, Udo: *See*—
Bressler, Peter; Cicero, David A.; Kiefer, Udo; and Citerone, Robert E., 267,553, Cl. D10-75.000.
Kinoyama, Takehisa: *See*—
Yamazaki, Ken; Yamamoto, Yosuki; Kinoyama, Takehisa; and Sasagawa, Kinichi, 267,535, Cl. D6-219.000.
Lenger, Sidney A., Jr., to Singer Company, The. Hutch or similar article. 267,530, 1-11-83, Cl. D6-53.000.
Lenger, Sidney A., Jr., to Singer Company, The. Drop lid chest or similar article. 267,531, 1-11-83, Cl. D6-154.000.
Litton Business Systems, Inc.: *See*—
Platner, Warren, 267,532, Cl. D6-164.000.
M & M Luggage Co., Inc.: *See*—
Stark, Ted, 267,522, Cl. D3-71.000.
MacDonald, J. B.: *See*—
Fossella, Gregory; MacDonald, J. B.; and Mercandante, Michael, 267,565, Cl. D16-32.000.
Mackay, Frederick G.: *See*—
Mackay, Spencer L.; Mackay, Frederick G.; Johnson, Allan B.; and Smith, David W., 267,581, Cl. D23-35.000.
Mackay, Spencer L.; Mackay, Frederick G.; Johnson, Allan B.; and Smith, David W., 267,582, Cl. D23-35.000.
Mackay, Spencer L.; Mackay, Frederick G.; Johnson, Allan B.; and Smith, David W., to Teledyne Industries, Inc. Showerhead. 267,581, 1-11-83, Cl. D23-35.000.
Mackay, Spencer L.; Mackay, Frederick G.; Johnson, Allan B.; and Smith, David W., to Teledyne Industries, Inc. Hand-held showerhead. 267,582, 1-11-83, Cl. D23-35.000.
Main, Thomas H., to Crown Zellerbach Corporation. Device for lifting and carrying rolls of sheet material. 267,520, 1-11-83, Cl. D3-30.100.
Manlove, Robert S. Overcap for aerosol container. 267,546, 1-11-83, Cl. D7-445.000.
Materias Plasticas, Limitada: *See*—
Cohen, Piet, 267,527, Cl. D6-90.000.
Cohen, Piet, 267,528, Cl. D6-92.000.
Mathieson, Robert G. Combined bottle opener key fob. 267,521, 1-11-83, Cl. D3-62.000.
Matsue, Yukihiko, to Yamaha Hatsudoki Kabushiki Kaisha. Motorcycle. 267,560, 1-11-83, Cl. D12-110.000.
Mercandante, Michael: *See*—
Fossella, Gregory; MacDonald, J. B.; and Mercandante, Michael, 267,565, Cl. D16-32.000.
Migliano, Joao E. B.: *See*—
Neto, Oscar T.; Migliano, Joao E. B.; and Fluckiger, Jean L., 267,544, Cl. D9-431.000.
Mineo, Kinji, to Yamato Iron Works Co., Ltd. Closure plug. 267,545, 1-11-83, Cl. D9-439.000.
Moore & Wright (Sheffield) Ltd.: *See*—
Smyth, Norman L.; and Hodgson, Roy G., 267,550, Cl. D10-62.000.
Mori, Masahiko, to Shinshu Seiki Kabushiki Kaisha; and Kabushiki Kaisha Suwa Seikosha. Ink-ribbon cassette. 267,567, 1-11-83, Cl. D18-22.000.
Mullins, Clyde E. Golf club head. 267,579, 1-11-83, Cl. D21-214.000.
Murphy, Paul K. Game board. 267,568, 1-11-83, Cl. D21-25.000.
Nashua Corporation: *See*—
Fossella, Gregory; MacDonald, J. B.; and Mercandante, Michael, 267,565, Cl. D16-32.000.
Neilson, William W. Car seat cover. 267,523, 1-11-83, Cl. D6-48.000.
Nemura, Dennis J.; and Wathen, John M., Jr., to American Can Company. Food container. 267,543, 1-11-83, Cl. D9-428.000.
Neto, Oscar T.; Migliano, Joao E. B.; and Fluckiger, Jean L., to Eutectic Corporation. Packaging container for welding rods. 267,544, 1-11-83, Cl. D9-431.000.
Nightingale, William T., III, to Pacer Technology & Resources, Inc. Container cap. 267,547, 1-11-83, Cl. D9-453.000.
Ogg, Elmer E., Jr.; Brun, George F., Jr.; and Wells, William E., to Systems Unlimited, Inc. Cart for bank check transfer trays. 267,594, 1-11-83, Cl. D34-22.000.
Pacer Technology & Resources, Inc.: *See*—
Nightingale, William T., III, 267,547, Cl. D9-453.000.
Palmer, Jerry P.; and Wittine, Randolph J., to General Motors Corporation. Wheel cover. 267,562, 1-11-83, Cl. D12-211.000.
Paone, Anthony N., to SCM Corporation. Ribbon cartridge shipping tray. 267,542, 1-11-83, Cl. D9-345.000.
Payne, C. Lee, Jr.; and Snoke, Phillip J., to Edwards, Ralph; and Stevenson, Frank E., Jr. Dust pan. 267,592, 1-11-83, Cl. D32-74.000.
Phillips, Jean H. Greeting card holder. 267,533, 1-11-83, Cl. D6-180.000.
Platner, Warren, to Litton Business Systems, Inc. Credenza or similar article. 267,532, 1-11-83, Cl. D6-164.000.
Poland Manufacturing Corporation: *See*—
Hauser, Billy G., 267,595, Cl. D34-34.000.
Polite, Clifford E., to Gamescience, Inc. Ten sided die. 267,569, 1-11-83, Cl. D21-41.000.
Pratt, David W. Fireplace insert. 267,583, 1-11-83, Cl. D23-94.000.
Price, Benjamin W. Combined fishing rod and reel with gun-shaped handle. 267,580, 1-11-83, Cl. D22-26.000.
Quaker Oats Company, The: *See*—
Argandona, Augusto, 267,570, Cl. D21-118.000.
Breneman, Jack L., 267,573, Cl. D21-135.000.
Riehm, Merry S., 267,571, Cl. D21-121.000.
Wilkes, Kenneth R., 267,572, Cl. D21-130.000.
Qwint Systems, Inc.: *See*—
Hoffman, Robert C., 267,566, Cl. D18-12.000.
Resnick, Lynda R., to Teleflora Inc. Combined flower vase and picture frame. 267,557, 1-11-83, Cl. D11-144.000.
Rhoads, Spencer: *See*—
Brescia, Anthony J.; and Rhoads, Spencer, 267,529, Cl. D6-131.000.
Riehm, Merry S., to Quaker Oats Company, The. Toy workbench. 267,571, 1-11-83, Cl. D21-121.000.
Rogus, Joseph J.: *See*—
Ambrosio, Thomas J.; Buchman, Henry J.; Rogus, Joseph J.; and Sochon, Henry R., 267,587, Cl. D24-25.000.
Russo Manufacturing Corp.: *See*—
Russo, Richard A., 267,539, Cl. D23-138.500.
Russo, Richard A., to Russo Manufacturing Corp. Coal bin. 267,539, 1-11-83, Cl. D23-138.500.
Sasagawa, Kinichi: *See*—
Yamazaki, Ken; Yamamoto, Yosuki; Kinoyama, Takehisa; and Sasagawa, Kinichi, 267,535, Cl. D6-219.000.
Schering Corporation: *See*—
Ambrosio, Thomas J.; Buchman, Henry J.; Rogus, Joseph J.; and Sochon, Henry R., 267,587, Cl. D24-25.000.
SCM Corporation: *See*—
Paone, Anthony N., 267,542, Cl. D9-345.000.
Seely, Douglas D., Jr.; and Seely, Douglas D., III. Multiple scale rule. 267,552, 1-11-83, Cl. D10-71.000.
Seely, Douglas D., III: *See*—
Seely, Douglas D., Jr.; and Seely, Douglas D., III, 267,552, Cl. D10-71.000.
Seyler, Daniel Z. Variable grade level. 267,551, 1-11-83, Cl. D10-65.000.
Shimizu, Toshiharu: *See*—
Ban, Koichiro; Kawashima, Tsunemi; and Shimizu, Toshiharu, 267,561, Cl. D12-110.000.
Shinshu Seiki Kabushiki Kaisha: *See*—
Mori, Masahiko, 267,567, Cl. D18-22.000.
Siemens Corporation: *See*—
Bressler, Peter; Cicero, David A.; Kiefer, Udo; and Citerone, Robert E., 267,553, Cl. D10-75.000.
Singer Company, The: *See*—
Lenger, Sidney A., Jr., 267,530, Cl. D6-53.000.
Lenger, Sidney A., Jr., 267,531, Cl. D6-154.000.
Smith, David W.: *See*—
Mackay, Spencer L.; Mackay, Frederick G.; Johnson, Allan B.; and Smith, David W., 267,581, Cl. D23-35.000.
Mackay, Spencer L.; Mackay, Frederick G.; Johnson, Allan B.; and Smith, David W., 267,582, Cl. D23-35.000.
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Snodgrass, Warren H. Chair. 267,525, 1-11-83, Cl. D6-69.000.
Snoke, Phillip J.: *See*—
Payne, C. Lee, Jr.; and Snoke, Phillip J., 267,592, Cl. D32-74.000.
Sobole, Pierre, to Societe Bourguignonne de Mecanique. Gas-fired infrared heater. 267,585, 1-11-83, Cl. D23-122.000.
Sochon, Henry R.: *See*—
Ambrosio, Thomas J.; Buchman, Henry J.; Rogus, Joseph J.; and Sochon, Henry R., 267,587, Cl. D24-25.000.

Societe Bourguignonne de Mecanique: *See*—
Sobole, Pierre, 267,585, Cl. D23-122.000.
Solartron Electronic Group Limited, The: *See*—
Swinstead, Nicholas D., 267,554, Cl. D10-75.000.
Stark, Ted, to M & M Luggage Co., Inc. Luggage. 267,522, 1-11-83, Cl. D3-71.000.
Steinkamp, Norman A.; Thomas, Richard K.; and Bluestein, Bernard B., to Sunbeam Corporation. Food processor. 267,538, 1-11-83, Cl. D7-386.000.
Stevens, Kipp K., to Briggs & Stratton Corporation. Automobile body. 267,558, 1-11-83, Cl. D12-91.000.
Stevenson, Frank E., Jr.: *See*—
Payne, C. Lee, Jr.; and Snoke, Phillip J., 267,592, Cl. D32-74.000.
Sunbeam Corporation: *See*—
Steinkamp, Norman A.; Thomas, Richard K.; and Bluestein, Bernard B., 267,538, Cl. D7-386.000.
Swinstead, Nicholas D., to Solartron Electronic Group Limited, The. Multi-function digital-circuit tester or similar article. 267,554, 1-11-83, Cl. D10-75.000.

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Brescia, Anthony J.; and Rhoads, Spencer, 267,529, Cl. D6-131.000.

Systems Unlimited, Inc.: *See*—
Ogg, Elmer E., Jr.; Brun, George F., Jr.; and Wells, William E., 267,594, Cl. D34-22.000.

Teledyne Industries, Inc.: *See*—
Mackay, Spencer L.; Mackay, Frederick G.; Johnson, Allan B.; and Smith, David W., 267,581, Cl. D23-35.000.
Mackay, Spencer L.; Mackay, Frederick G.; Johnson, Allan B.; and Smith, David W., 267,582, Cl. D23-35.000.

Teleflora Inc.: *See*—
Resnick, Lynda R., 267,557, Cl. D11-144.000.

Thomas, Richard K.: *See*—
Steinkamp, Norman A.; Thomas, Richard K.; and Bluestein, Bernard B., 267,538, Cl. D7-386.000.

Tropitone Furniture Co., Inc.: *See*—
Hickey, Larry G., 267,524, Cl. D6-63.000.
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Wathen, John M., Jr.: *See*—
Nemura, Dennis J.; and Wathen, John M., Jr., 267,543, Cl. D9-428.000.
Wells, William E.: *See*—
Ogg, Elmer E., Jr.; Brun, George F., Jr.; and Wells, William E., 267,594, Cl. D34-22.000.
White Mop Wringer Company: *See*—
Crawford, Brian F.; and Jaros, Philip, 267,593, Cl. D34-01.000.
Wilkes, Kenneth R., to Quaker Oats Company, The. Toy boat. 267,572, 1-11-83, Cl. D21-130.000.
Wittine, Randolph J.: *See*—
Palmer, Jerry P.; and Wittine, Randolph J., 267,562, Cl. D12-211.000.
Worley, Robert I. Rotating light display. 267,589, 1-11-83, Cl. D26-96.000.
Wormser, Robert S. Boat trailer. 267,559, 1-11-83, Cl. D12-97.000.
Wright, Dennis S., to General Motors Corporation. Vehicle wheel. 267,564, 1-11-83, Cl. D12-211.000.
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Ban, Koichiro; Kawashima, Tsunemi; and Shimizu, Toshiharu, 267,561, Cl. D12-110.000.
Matsue, Yukihiko, 267,560, Cl. D12-110.000.
Yamamoto, Yosuki: *See*—
Yamazaki, Ken; Yamamoto, Yosuki; Kinoyama, Takehisa; and Sasagawa, Kinichi, 267,535, Cl. D6-219.000.
Yamato Iron Works Co., Ltd.: *See*—
Mineo, Kinji, 267,545, Cl. D9-439.000.
Yamazaki, Ken; Yamamoto, Yosuki; Kinoyama, Takehisa; and Sasagawa, Kinichi, to Duskin Franchise Kabushiki Kaisha. Doormat support plate or similar article. 267,535, 1-11-83, Cl. D6-219.000.
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Meek, Jack M.; and Duffett, William E., 4,973, Cl. 74.000.
Fischer, Arnold W., to Pan American Plant Company. African Violet named Aurora. 4,972, 1-11-83, Cl. 69.000.
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NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

439 4,367,561

CLASS 3

1.91 4,367,562

CLASS 6

6 R 4,367,563

CLASS 8

102 4,368,053
527 4,368,054
662 4,368,055

CLASS 15

179 4,367,564
321 4,367,565

CLASS 16

236 4,367,566
263 4,367,567

CLASS 24

122.6 4,367,568
211 P 4,367,569
230 R 4,367,570
249 R 4,367,571
301 4,367,572

CLASS 29

25.13 4,367,573
25.19 4,367,574
33 M 4,367,575
90 R 4,367,576
234 4,367,577
429 4,367,578
559 4,367,579
571 4,367,580
572 4,367,581
623.1 4,367,582
739 4,367,583
837 4,367,584
857 4,367,585

CLASS 30

241 4,367,586
276 4,367,587

CLASS 33

1 M 4,367,588
1 N 4,367,589
137 R 4,367,590
169 C 4,367,591
172 E 4,367,592
174 N 4,367,593
181 R 4,367,594

CLASS 34

27 4,367,595
147 4,367,596
155 4,367,597
164 4,367,598

CLASS 36

44 4,367,599
127 4,367,600

CLASS 37

57 4,367,601
142 A 4,367,602
251 4,367,603

CLASS 40

564 4,367,604
584 4,367,605

CLASS 42

1 ST 4,367,606

CLASS 43

42.1 4,367,607

CLASS 44

53 4,368,056

CLASS 46

7 4,367,608

CLASS 47

57.6 4,367,609

CLASS 48

197 R 4,368,057

CLASS 49

336 4,367,610

CLASS 51

41 4,367,611

CLASS 52

9 4,367,612
188 4,367,613
455 4,367,614
583 4,367,615
664 4,367,616

CLASS 53

212 4,367,617
234 4,367,618
245 4,367,619
479 4,367,620

CLASS 55

21 4,368,058
73 4,368,059
4,368,060

CLASS 56

10.2 4,367,621
364 4,367,622

CLASS 57

263 4,367,623

CLASS 60

484 4,367,624
517 4,367,625
606 4,367,626
641.12 4,367,627
657 4,367,628
669 4,367,629

CLASS 62

28 4,368,061
63 4,367,630
79 4,367,631
82 4,367,632
236 4,367,633
238.6 4,367,634
259.1 4,367,635
262 4,367,636
292 4,367,637
324.6 4,367,638
499 4,367,639

CLASS 65

29 4,368,062
42 4,368,063
105 4,368,064
114 4,368,065

CLASS 71

76 4,368,066
92 4,368,067
93 4,368,068
4,368,069

CLASS 72

11 4,367,640
65 4,367,641
234 4,367,642
353 4,367,643
389 4,367,644

CLASS 73

23.1 4,367,645
37.9 4,367,646
84 4,367,647
483 Re.31,120
620 4,367,648
645 4,367,649
649 4,367,650
706 4,367,651
861 4,367,652
861.21 4,367,653
861.29 4,367,654
862.54 4,367,655
862.65 4,367,656
864.61 4,367,657

CLASS 74

40 4,367,658
501 R 4,367,659
625 4,367,660
665 GE 4,367,661
863 4,367,662

CLASS 75

0.5 B 4,368,070
0.5 R 4,368,071
84.4 4,368,072
108 4,368,073

CLASS 81

177 A 4,367,663
436 4,367,664

CLASS 83

100 4,367,665
203 4,367,666
356.3 4,367,667
415 4,367,668
579 4,367,669

CLASS 84

1.26 4,367,670
306 4,367,671

CLASS 91

375 A 4,367,672
437 4,367,673

CLASS 92

13.2 4,367,674

CLASS 99

546 4,367,675

CLASS 101

91 4,367,676
124 4,367,677
350 4,367,678
410 4,367,679

CLASS 102

387 4,367,680

CLASS 104

7 B 4,367,681
17 A 4,367,682
166 4,367,683

CLASS 106

20 4,368,075
22 4,368,076
96 4,368,077
164 4,368,078

CLASS 109

70 4,367,684

CLASS 110

347 4,367,685
4,367,686

CLASS 112

217.1 4,367,687

CLASS 114

39 4,367,688
346 4,367,689

CLASS 118

60 4,367,690
119 4,367,691
415 4,367,692
674 4,367,693

CLASS 119

17 4,367,694
19 4,367,695
96 4,367,696

CLASS 122

2 4,367,697

CLASS 123

1 A 4,367,698
41.23 4,367,699
64 4,367,700
90.55 4,367,701
182 4,367,702
198 DB 4,367,705
198 F 4,367,703
4,367,704
4,367,706
306 4,367,707
339 4,367,708
4,367,709
416 4,367,710
417 4,367,711
427 4,367,712
440 4,367,713
449 4,367,714
458 4,367,715
478 4,367,716
557 4,367,717
4,367,718
568 4,367,719
571 4,367,720
617 4,367,721
644 4,367,722

CLASS 124

67 4,367,723

CLASS 126

20 4,367,724
77 4,367,725
422 4,367,726
449 4,367,727

CLASS 127

1 4,368,079

CLASS 128

1 R 4,367,728
6 4,367,729
4,367,730
71 4,367,731
156 4,367,732
166 4,367,733
204.13 4,367,734
207.18 4,367,735
214 E 4,367,736
215 4,367,737
218 PA 4,367,738
236 4,367,739
260 4,367,741
283 4,367,742
303.1 4,367,743
4,367,744
303.13 4,367,745
325 4,367,746
344 4,367,747
521 4,367,748
637 4,367,749
638 4,367,750
682 4,367,751
689 4,367,752
708 4,367,753
763 4,367,754
798 4,367,755

CLASS 130

23 4,367,756
27 T 4,367,757

CLASS 131

84 B 4,367,758

CLASS 132

89 4,367,759

CLASS 133

4 A 4,367,760

CLASS 134

1 4,368,080
2 4,368,081
4 4,368,082

CLASS 135

33 C 4,367,762
87 4,367,761

CLASS 137

106 4,367,763
115 4,367,764
243 4,367,766
489 4,367,767
493 Re.31,121
527.6 4,367,768
881 4,367,765

CLASS 138

114 4,367,769

CLASS 139

66 R 4,367,770
358 4,367,771
435 4,367,772
452 4,367,773

CLASS 140

1 4,367,774
105 4,367,775
112 4,367,776

CLASS 144

346 4,367,777

CLASS 145

30 R 4,367,778
33 A 4,367,779

CLASS 148

1.5 4,368,083
12 C 4,368,084
33.3 4,368,085

CLASS 156

51 4,368,214
93 4,368,086
102 4,368,087
143 4,368,088
243 4,368,089
283 4,368,090
287 4,368,091
345 4,368,092
443 4,368,093
462 4,368,094
497 4,368,095
502 4,368,096
578 4,368,097
606 4,368,098
628 4,368,099

CLASS 159

48.1 4,368,100

CLASS 160

213 4,367,780
332 4,367,781

CLASS 162

4 4,368,101
156 Re.31,124
258 4,368,102

CLASS 164

137 4,367,782
452 4,367,783
473 4,367,784

CLASS 165

2 4,367,785
10 4,367,786
35 4,367,787
53 4,367,788
76 4,367,789
95 4,367,790
109 T 4,367,791
113 4,367,792
151 4,367,793

CLASS 166

65 R 4,367,794
84 4,367,795
254 Re.31,122
341 4,367,796
380 4,367,797

CLASS 168

45 4,367,798

CLASS 169

46 4,367,799

CLASS 173

127 4,367,800

CLASS 174

47 4,368,348
52 PE 4,368,349
102 D 4,368,350

CLASS 177

211 4,367,801

CLASS 178

19 4,368,351
4,368,352
30 4,368,353

CLASS 179

1 GB 4,368,354
1 GS 4,368,355
4,368,356
1.5 R 4,368,357
17 B 4,368,358
146 R 4,368,359
170.2 4,368,360
4,368,361
4,368,362
175.3 R 4,368,363

CLASS 180

131 4,367,802
153 4,367,803
176 4,367,804
179 4,367,805
308 4,367,806

CLASS 181

230 4,367,807
272 4,367,808

CLASS 182

48 4,367,809

CLASS 187

29 R 4,367,810
4,367,811

CLASS 192

3.3 4,367,812
17 R 4,367,813

CLASS 198

301 4,367,814
374 4,367,815

CLASS 200

6 R 4,368,364
11 TW 4,368,365
83 Q 4,368,366
148 A 4,368,367
153 J 4,368,368
264 4,368,369
329 4,368,370

CLASS 202

99 4,368,103
248 4,368,104

CLASS 204

1 T 4,368,105
15 4,368,106
24 4,368,107
43 R 4,368,108
253 4,368,109
290 F 4,368,110

CLASS 206

439 4,367,816

CLASS 208

11 LE 4,368,111
31 4,368,112
89 4,368,113
120 4,368,114
215 4,368,115

CLASS 209

166 4,368,116
167 4,368,117
580 4,367,817

CLASS 210

136 4,368,118
137 4,368,119
170 4,368,120
4,368,121
242.3 4,368,122
269 4,368,123
321.3 4,368,124
403 4,368,125
663 4,368,126

CLASS 211

49 D 4,367,818
59.1 4,367,819

CLASS 215

12 R 4,367,820

CLASS 219

73 4,368,371
84 4,368,372
86.22 4,368,373
121 EN 4,368,374
125.12 4,368,375
222 4,368,376
345 4,368,377
451 4,368,378
494 4,368,379

539 4,368,380

CLASS 220

72 4,367,821
265 4,367,822
316 4,367,823
326 4,367,824
346 4,367,825

CLASS 221

213 4,367,826

CLASS 222

2 4,367,827
528 4,367,828

CLASS 224

31 4,367,829
258 4,367,830

CLASS 226

14 4,367,831
108 4,367,832

CLASS 227

8 4,367,833
67 4,367,834
109 4,367,835
136 4,367,837
142 4,367,836

CLASS 228

112 4,367,838
155 4,367,839

CLASS 229

39 R 4,367,840
54 R 4,367,841
55 4,367,842

CLASS 231

2 E 4,367,843

CLASS 232

17 4,367,844

CLASS 235

1 C 4,368,381
92 PK 4,368,382

CLASS 236

21 R 4,367,845

CLASS 239

96 4,367,846
337 4,367,847
665 4,367,848

CLASS 241

283 4,367,855

CLASS 242

18 PW 4,367,849
55.19 A 4,367,850
107.7 4,367,851
129.72 4,367,852
163 4,367,853
198 4,367,854
204 4,367,856

CLASS 248

74 R 4,367,857
75 4,367,858
318 4,367,859
641 4,367,860

CLASS 250

201 4,368,383
213 R 4,368,386
251 4,368,387
283 4,368,388
363 R 4,368,390
363 S 4,368,389
484.1 4,368,384
551 4,368,385

CLASS 251

61 4,367,861

CLASS 252

8.8 4,368,127
8.9 4,368,128
32.7 E 4,368,129
33.4 4,368,130
62.55 4,368,131
4,368,132
75 4,368,133
140 4,368,134
299.63 4,368,135
316 4,368,136
344 4,368,137
363.5 4,368,138
384 4,368,139
426 4,368,140
439 4,368,141
455 R 4,368,142
457 4,368,143
463 4,368,144
522 R 4,368,145
542 4,368,146

545 4,368,147

CLASS 254

231 4,367,862
391 4,367,863

CLASS 256

59 4,367,864

CLASS 260

112 B 4,368,148
4,368,149
112.5 R 4,368,150
123.5 4,368,151
4,368,152
156 4,368,153
4,368,154
157 4,368,155
239 A 4,368,156
239 BD 4,368,157
4,368,158
4,368,159
397.4 4,368,160
448 R 4,368,161
502.5 G 4,368,162

CLASS 261

39 R 4,368,163

CLASS 264

37 4,368,164
40.4 4,368,165
61 4,368,166
104 4,368,167
272.14 4,368,168

CLASS 266

44 4,367,865
99 4,367,866
190 4,367,867
225 4,367,868

CLASS 269

324 4,367,869

CLASS 272

144 4,367,870

CLASS 273

29 A 4,367,871
54 B 4,367,872
60 R 4,367,873
73 R 4,367,874
85 F 4,367,875
121 A 4,367,876
164 4,367,877
175 4,367,878
211 4,367,879

CLASS 280

47.13 R 4,367,880
96 4,367,881
276 4,367,882
301 4,367,883
423 B 4,367,884
614 4,367,885
802 4,367,886
803 4,367,887

CLASS 285

28 4,367,888
149 4,367,889
334 Re.31,123

CLASS 290

4 D 4,368,391
52 4,367,890
54 4,368,392

CLASS 294

88 4,367,891
89 4,367,892
106 4,367,893

CLASS 297

19 4,367,894
85 4,367,895
195 4,367,896
284 4,367,897

CLASS 299

1 4,367,898
4,367,899
4,367,900
2 4,367,901
42 4,367,902

CLASS 303

13 4,367,903

CLASS 307

115 4,368,393
4,368,394
455 4,368,395

CLASS 308

182 4,367,905

CLASS 310

27 4,368,396
52 4,368,397
248 4,368,398
270 4,368,399
322 4,368,400
324 4,368,401
367 4,368,402

CLASS 312

330 R 4,367,906

CLASS 313

457 4,368,403
497 4,368,404

CLASS 315

16 4,368,405
158 4,368,406
291 4,368,407
360 4,368,408
411 4,368,409

CLASS 318

116 4,368,410
254 4,368,411
632 4,368,412
687 4,368,413
696 4,368,414

CLASS 322

2 R 4,368,415
4,368,416
29 4,368,417

CLASS 323

201 4,368,418
239 4,368,419
303 4,368,420

CLASS 324

58.5 A 4,368,421
64 4,368,422
65 R 4,368,423
142 4,368,424
158 T 4,368,425
161 4,368,426
4,368,427
178 4,368,428
225 4,368,429
244 4,368,430
466 4,368,431

CLASS 328

14 4,368,432
30 4,368,433

CLASS 329

50 4,368,434

CLASS 330

133 4,368,435
207 P 4,368,436

CLASS 331

2 4,368,437
14 4,368,438

CLASS 332

9 R 4,368,439

CLASS 333

172 4,368,440

CLASS 334

15 4,368,441

CLASS 335

57 4,368,442
138 4,368,443
166 4,368,444
210 4,368,445
258 4,368,446

CLASS 336

20 4,368,447
61 4,368,448

CLASS 337

313 4,368,449
363 4,368,450
380 4,368,451
414 4,368,452

CLASS 338

25 4,368,453

CLASS 339

113 R 4,367,907
154 A 4,367,908
176 MF 4,367,909
275 B 4,367,910

CLASS 340

22 4,368,454
74 4,368,455
146.3 Q 4,368,456
347 AD 4,368,457
396 4,368,458
407 4,368,459
522 4,368,460
703 4,368,461
723 4,368,462
744 4,368,463
756 4,368,464
771 4,368,465
799 4,368,466
4,368,467

CLASS 343

16 M 4,368,468
100 ST 4,368,469
113 R 4,368,470
704 4,368,471
718 4,368,472
753 4,368,473

CLASS 346

75 4,368,474
4,368,475
140 R 4,368,476
4,368,477
4,368,478

CLASS 350

3.61 4,367,911
6.8 4,367,912
96.12 4,367,916
96.23 4,367,917
96.30 4,367,918
105 4,367,919
4,367,920
164 4,367,921
301 4,367,922
334 4,367,924
345 4,367,923
355 4,367,925
358 4,367,926
426 4,367,927
453 4,367,928
500 4,367,913
530 4,367,914
4,367,915

CLASS 351

119 4,367,929

CLASS 352

27 4,367,930

CLASS 354

23 D 4,367,931
4,367,932
4,367,933
25 4,367,934
4,367,935
173 4,367,936
4,367,937
234 4,367,938
272 4,367,939
317 4,367,940
324 4,367,941

CLASS 355

3 R 4,367,942
4,367,943
14 CH 4,367,944
14 D 4,367,948
51 4,367,945
71 4,367,946
75 4,367,947

CLASS 356

144 4,367,949
338 4,367,950
357 4,367,951
400 4,367,952

CLASS 357

5 4,368,479
25 4,368,480
30 4,368,481

CLASS 358

29 4,368,482
36 4,368,483
41 4,368,484
64 4,368,485
146 4,368,486
166 4,368,487
208 4,368,488
4,368,489
217 4,368,490
283 4,368,491

CLASS 360

70 4,368,492
93 4,368,493
96.5 4,368,494
97 4,368,495
110 4,368,496
132 4,368,497

CLASS 361

48 4,368,498
90 4,368,499
94 4,368,500
152 4,368,501
192 4,368,502
414 4,368,503

CLASS 362

33 4,368,504
80 4,368,505
147 4,368,506
200 4,368,507
267 4,368,508

CLASS 364

148 4,368,509
151 4,368,510
167 4,368,511
200 4,368,512
4,368,513
4,368,514
4,368,515
411 4,368,516
428 4,368,517
433 4,368,518
483 4,368,519
494 4,368,520
506 4,368,521
550 4,368,522

CLASS 365

63 4,368,523
205 4,368,529
226 4,368,524

CLASS 366

132 4,367,953
156 4,367,954

CLASS 367

12 B1 3,553,638
165 4,368,525

CLASS 368

10 4,367,955
88 4,367,956
114 4,367,957
188 4,367,958
240 4,367,959
309 4,367,960

CLASS 369

45 4,368,526
55 4,368,527
136 4,368,528
264 4,368,530

CLASS 370

100 4,368,531

CLASS 371

21 4,368,532
37 4,368,533
53 4,368,534

CLASS 374

44 B1 4,255,962
46 4,367,961

CLASS 376

148 4,368,169
216 4,368,170
217 4,368,171

CLASS 378

15 4,368,535
19 4,368,536
112 4,368,537
122 4,368,538

CLASS 384

95 4,367,904

CLASS 400

124 4,367,962
208 4,367,963
605 4,367,964

CLASS 401

60 4,367,965
190 4,367,966

CLASS 403

41 4,367,967
122 4,367,968
253 4,367,969
323 4,367,970
330 4,367,971
387 4,367,972
405 4,367,973

CLASS 404

5 4,367,974
6 4,367,975
68 4,367,976

CLASS 405

25 4,367,977
30 4,367,978
70 4,367,979
169 4,367,980
195 4,367,981
202 4,367,982
227 4,367,983
258 4,367,984
264 4,367,985
266 4,367,986

CLASS 406

15 4,367,987
63 4,367,988
153 4,367,989

CLASS 407

114 4,367,990

CLASS 408

224 4,367,991

CLASS 409

264 4,367,992

CLASS 410

103 4,367,993

CLASS 411

43 4,367,994
57 4,367,995

CLASS 413

14 4,367,996

CLASS 414

4 4,367,998
38 4,367,997
51 4,367,999
111 4,368,000
331 4,368,001
494 4,368,002
523 4,368,003

CLASS 415

39 4,368,004
207 4,368,005

CLASS 416

140 4,368,006
238 4,368,007

CLASS 417

46 4,368,008
191 4,368,009
271 4,368,010

CLASS 418

61 B 4,368,011
4,368,012
74 4,368,013

CLASS 419

51 4,368,074

CLASS 420

584 4,368,172

CLASS 422

162 B1 4,261,953
197 4,368,173
208 4,368,174

CLASS 423

7 4,368,175
25 4,368,176
175 4,368,177
226 4,368,178
315 4,368,179
344 4,368,180
345 4,368,181
450 4,368,182
522 4,368,183

CLASS 424

66 4,368,184
78 4,368,185
4,368,186
81 4,368,187
4,368,188
4,368,189
88 4,368,190
4,368,191
177 4,368,192
180 4,368,193
185 4,368,194
195 4,368,195
200 4,368,196
245 4,368,197
246 4,368,198
250 4,368,199
4,368,200
272 4,368,201
273 P 4,368,202
274 4,368,203
4,368,204
4,368,205
312 4,368,206
343 4,368,207

CLASS 425

28 B 4,368,014
29 4,368,015
94 4,368,016
131.1 4,368,017
138 4,368,018

141	4,368,019
195	4,368,020
265	4,368,021
343	4,368,022
392	4,368,023
397	4,368,024
462	4,368,025
466	4,368,026
527	4,368,027
569	4,368,028
CLASS 426	
250	4,368,208
504	4,368,209
557	4,368,210
564	4,368,211
579	4,368,212
590	4,368,213
CLASS 427	
38	4,368,215
74	4,368,216
181	4,368,217
222	4,368,218
236	4,368,219
255.4	4,368,220
305	4,368,221
340	4,368,222
443.1	4,368,223
CLASS 428	
31	4,368,224
	4,368,225
34	4,368,226
91	4,368,227
110	4,368,228
120	4,368,229
203	4,368,230
220	4,368,231
228	4,368,232
245	4,368,233
	4,368,234
412	4,368,235
	4,368,236
413	4,368,237
	4,368,238
421	4,368,239
447	4,368,240
	4,368,241
	4,368,242
CLASS 429	
147	4,368,243
217	4,368,244
CLASS 430	
5	4,368,245
9	4,368,246
17	4,368,247
	4,368,248
	4,368,249
109	4,368,250
223	4,368,251
312	4,368,252
326	4,368,253
333	4,368,254
351	4,368,255
359	4,368,256
384	4,368,257
493	4,368,258
546	4,368,259
562	4,368,260
CLASS 431	
7	4,368,029
13	4,368,030
79	4,368,031
118	4,368,032
CLASS 432	
6	4,368,033
11	4,368,034
13	4,368,035
146	4,368,036
239	4,368,037
253	4,368,038
CLASS 433	
5	4,368,039
36	4,368,040
69	4,368,041
213	4,368,042
217	4,368,043
CLASS 434	
249	4,368,044
304	4,368,045
	4,368,046
CLASS 435	
4	4,368,047
15	4,368,261
23	4,368,262
47	4,368,263
52	4,368,264
75	4,368,265
110	4,368,266
123	4,368,267
161	4,368,268
172	4,368,269
226	4,368,270
247	4,368,271
293	4,368,272
CLASS 440	
75	4,368,048
CLASS 455	
166	4,368,539
180	4,368,540
186	4,368,541
316	4,368,542
612	4,368,543
CLASS 464	
50	4,368,049
83	4,368,050
CLASS 493	
11	4,368,051
96	4,368,052
CLASS 501	
155	4,368,273
CLASS 521	
48	4,368,274
52	4,368,275
79	4,368,276
84	4,368,277
115	4,368,278
122	4,368,279
CLASS 523	
211	4,368,280
458	4,368,281
CLASS 524	
58	4,368,282
109	4,368,283
230	4,368,284
293	4,368,285
394	4,368,286
513	4,368,287
539	4,368,288
598	4,368,289
CLASS 525	
29	4,368,290
53	4,368,291
54.23	4,368,292
68	4,368,293
100	4,368,294
166	4,368,295
276	4,368,296
342	4,368,297
480	4,368,298
481	4,368,299
531	4,368,300
CLASS 526	
100	4,368,301
105	4,368,302
106	4,368,303
114	4,368,304
116	4,368,305
125	4,368,306
202	4,368,307
247	4,368,308
258	4,368,309
314	4,368,310
317	4,368,311
323.2	4,368,312
CLASS 528	
14	4,368,313
89	4,368,314
198	4,368,315
295.5	4,368,316
323	4,368,317
326	4,368,318
353	4,368,319
355	4,368,320
388	4,368,321
CLASS 536	
20	4,368,322
56	4,368,323
114	4,368,324
CLASS 544	
16	4,368,325
CLASS 546	
45	4,368,326
CLASS 548	
262	4,368,327
306	4,368,328
CLASS 549	
13	4,368,329
315	4,368,330
417	4,368,331
CLASS 560	
120	4,368,332
CLASS 562	
407	4,368,333
670	4,368,334
CLASS 564	
245	4,368,335
CLASS 568	
428	4,368,336
613	4,368,337
CLASS 570	
109	4,368,338
202	4,368,339
207	4,368,340
CLASS 585	
25	4,368,341
446	4,368,342
456	4,368,343
624	4,368,344
643	4,368,345
658	4,368,346
828	4,368,347
CLASS 604	
43	4,367,740

CLASSIFICATION OF DESIGNS

D2—	251	267,518
	400	267,519
D3—	30.1	267,520
	62	267,521
	71	267,522
D6—	48	267,523
	53	267,530
	63	267,524
	69	267,525
	90	267,526
		267,527
	92	267,528
	131	267,529
	154	267,531
	164	267,532
	180	267,533
	191	267,534
	219	267,535
D7—	141	267,537
	318	267,536
	386	267,538
	445	267,546
D8—	360	267,540
		267,541
D9—	345	267,542
	428	267,543
	431	267,544
	439	267,545
	453	267,547
D10—	38	267,548
	39	267,549
	62	267,550
	65	267,551
	71	267,552
	75	267,553
		267,554
D11—	2	267,555
	133	267,556
	144	267,557
D12—	91	267,558
	97	267,559
	110	267,560
		267,561
	211	267,562
		267,563
		267,564
D16—	32	267,565
D18—	12	267,566
	22	267,567
D21—	25	267,568
	41	267,569
	118	267,570
	121	267,571
	130	267,572
	135	267,573
	147	267,574
	182	267,575
		267,576
		267,577
		267,578
	214	267,579
D22—	26	267,580
D23—	35	267,581
		267,582
	94	267,583
		267,584
	122	267,585
	138.5	267,539
D24—	10	267,586
	25	267,587
D25—	15	267,588
D26—	96	267,589
D27—	51	267,590
D32—	52	267,591
	74	267,592
D34—	01	267,593
	22	267,594
	34	267,595

CLASSIFICATION OF PLANTS

P.—	69	4,972
	74	4,973

GEOGRAPHICAL INDEX

OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	4,367,564		4,368,234	16 :	4,367,790		4,368,132		4,368,193		4,368,157
	4,367,685		4,368,364	17 :	4,367,578	23 :	4,367,612		4,368,224		4,368,158
	4,368,125		4,368,419		4,367,652		4,367,688		4,368,225		4,368,159
04 :	4,367,563		4,368,420		4,367,692	24 :	4,367,604		4,368,406		4,368,184
	4,367,593		4,368,460		4,367,698		4,367,880	27 :	4,367,620		4,368,190
	4,368,123		4,368,462		4,367,736		4,367,913		4,367,717		4,368,201
	4,368,452		4,368,471		4,367,826		4,368,069		4,367,745		4,368,207
	4,368,483		4,368,473		4,367,827		4,368,326		4,367,753		4,368,265
06 :	Re.31,121		4,368,506		4,367,829		4,368,408		4,367,755		4,368,267
	4,367,561		4,368,515		4,367,860		4,368,459		4,367,843		4,368,285
	4,367,582		4,368,524		4,367,866		4,368,468		4,367,850		4,368,316
	4,367,590	08 :	4,367,885		4,367,872		4,368,519		4,367,864		4,368,323
	4,367,602		4,367,901		4,367,875		4,368,539		4,367,907		4,368,357
	4,367,615		4,367,924		4,368,023		4,368,542		4,367,919		4,368,359
	4,367,626		4,367,947		4,368,046	25 :	4,367,680		4,367,920		4,368,514
	4,367,629		4,367,976		4,368,052		4,367,714		4,367,950		4,368,541
	4,367,633		4,368,387		4,368,056		4,367,779		4,368,211		4,368,543
	4,367,663	09 :	4,367,583		4,368,116		4,367,821	28 :	4,368,097	35 :	4,367,657
	4,367,666		4,367,676		4,368,127		4,367,915	29 :	4,367,665	36 :	4,367,570
	4,367,671		4,367,699		4,368,151		4,367,971		4,367,764		4,367,572
	4,367,741		4,367,735		4,368,208		4,368,050		4,367,884		4,367,584
	4,367,743		4,367,750		4,368,350		4,368,120		4,368,137		4,367,599
	4,367,751		4,367,785		4,368,356		4,368,243		4,368,341		4,367,625
	4,367,754		4,367,810		4,368,379		4,368,272	31 :	4,367,763		4,367,635
	4,367,767		4,367,908		4,368,410		4,368,392		4,367,848		4,367,639
	4,367,778		4,367,918		4,368,485		4,368,407		4,367,881		4,367,762
	4,367,793		4,367,987		4,368,502		4,368,423	32 :	4,367,565		4,367,841
	4,367,796		4,368,005	18 :	4,367,670		4,368,425		4,367,576		4,367,847
	4,367,797		4,368,006		4,367,774		4,368,434		4,367,605		4,367,853
	4,367,802		4,368,031		4,368,028		4,368,480		4,367,731		4,367,869
	4,367,816		4,368,073		4,368,062		4,368,499		4,367,966		4,367,870
	4,367,837		4,368,092		4,368,156	26 :	Re.31,120		4,368,124		4,367,910
	4,367,845		4,368,214		4,368,187		4,367,567	33 :	4,367,781		4,367,922
	4,367,857		4,368,240		4,368,188		4,367,632		4,368,430		4,367,930
	4,367,871		4,368,330		4,368,189		4,367,656	34 :	4,367,579		4,367,946
	4,367,878		4,368,331		4,368,213		4,367,662		4,367,600		4,367,960
	4,367,892		4,368,351		4,368,268		4,367,695		4,367,737		4,368,040
	4,367,911		4,368,352		4,368,370		4,367,701		4,367,738		4,368,044
	4,367,925	10 :	4,368,068		4,368,437		4,367,715		4,367,742		4,368,079
	4,367,949		4,368,289		4,368,516		4,367,721		4,367,819		4,368,106
	4,367,963		4,368,309		4,368,540		4,367,726		4,367,835		4,368,146
	4,367,969	12 :	4,367,675	19 :	4,367,569		4,367,744		4,368,063		4,368,153
	4,367,973		4,367,752		4,367,607		4,367,844		4,368,064		4,368,154
	4,367,981		4,367,798		4,367,613		4,367,895		4,368,089		4,368,197
	4,367,989		4,368,244		4,367,689		4,367,905		4,368,114		4,368,205
	4,368,007		4,368,329		4,367,705		4,367,957		4,368,115		4,368,206
	4,368,019		4,368,389		4,367,803		4,367,970		4,368,126		4,368,212
	4,368,098		4,368,432	20 :	4,367,733		4,367,977		4,368,129		4,368,226
	4,368,118	13 :	4,367,818		4,367,894		4,367,978		4,368,131		4,368,235
	4,368,168		4,368,233	21 :	4,367,621		4,367,988		4,368,134		4,368,236
	4,368,186		4,368,282		4,367,700		4,368,093		4,368,139		4,368,241
	4,368,215		4,368,429		4,368,396		4,368,166		4,368,145		4,368,246
	4,368,220	15 :	4,368,045	22 :	4,368,113		4,368,169		4,368,147		4,368,247

	4,368,248		4,367,859		4,367,917		4,368,074		4,367,594		4,367,777
	4,368,249		4,367,865		4,367,983		4,368,077		4,367,606		4,367,849
	4,368,250		4,367,874		4,368,111		4,368,087		4,367,630		4,368,411
	4,368,279		4,367,882		4,368,130		4,368,174		4,367,638		4,368,479
	4,368,313		4,367,928		4,368,136		4,368,281		4,367,794	53 :	4,367,577
	4,368,315		4,367,961		4,368,141		4,368,378		4,367,795		4,367,592
	4,368,335		4,367,967		4,368,182		4,368,399		4,367,823		4,367,616
	4,368,363		4,368,003		4,368,301		4,368,424		4,367,940		4,367,664
	4,368,418		4,368,008		4,368,303		4,368,440		4,367,980		4,367,668
	4,368,507		4,368,009		4,368,321		4,368,445		4,367,982		4,367,806
	4,368,509		4,368,011		4,368,344		4,368,455		4,368,041		4,367,830
	4,368,513		4,368,012		4,368,346		4,368,492		4,368,057		4,367,852
	4,368,527		4,368,021	41 :	4,367,614		4,368,500		4,368,110		4,367,877
	4,368,534		4,368,086		4,367,640		4,368,510		4,368,163		4,367,955
	4,368,538		4,368,104		4,368,072		4,368,520		4,368,178		4,368,035
37 :	4,367,631		4,368,133	42 :	4,367,628						
	4,367,749		4,368,140		4,367,644	44 :	4,368,167		4,368,338		4,368,039
	4,368,055		4,368,164		4,367,740		4,368,451		4,368,342		4,368,049
	4,368,194		4,368,222		4,367,792	45 :	4,367,681		4,368,395	54 :	4,367,996
	4,368,274		4,368,276		4,367,799		4,367,739		4,368,466		4,368,498
	4,368,361		4,368,310		4,367,801		4,367,759	49 :	4,367,788		4,368,530
	4,368,362		4,368,349		4,367,858	47 :	4,367,643		4,368,047	55 :	4,367,586
38 :	4,367,814		4,368,373		4,367,903		4,367,646		4,368,058		4,367,603
39 :	4,367,585		4,368,469		4,367,909		4,368,109		4,368,085		4,367,659
	4,367,588		4,368,475		4,367,992		4,368,262		4,368,128		4,367,696
	4,367,634		4,368,517		4,367,993		4,368,375		4,368,472		4,367,702
	4,367,673		4,368,521		4,368,002		4,368,416	50 :	4,367,725		4,367,879
	4,367,682	40 :	4,367,587		4,368,020	48 :	Re.31,122		4,367,783		4,368,270
	4,367,718		4,367,651		4,368,065		Re.31,123	51 :	4,367,601		4,368,376
	4,367,782		4,367,883		4,368,067		4,367,580		4,367,773	56 :	4,367,964

DESIGN PATENTS

9 :	267,532		267,582		267,564		267,569		267,573	40 :	267,591
06 :	267,524		267,586	27 :	267,519	34 :	267,522		267,593	41 :	267,520
	267,525	12 :	267,559		267,537		267,551	37 :	267,530	42 :	267,543
	267,526	13 :	267,592		267,575		267,587		267,531		267,553
	267,546	17 :	267,538		267,576	36 :	267,529		267,580	47 :	267,556
	267,547		267,566		267,577		267,542		267,595	48 :	267,589
	267,557	18 :	267,552		267,578		267,570	39 :	267,533	53 :	267,583
	267,568	25 :	267,539		267,584		267,571		267,536	55 :	267,518
	267,579		267,565		267,588		267,572		267,594		267,558
	267,581	26 :	267,562	28 :	267,555						

PLANT PATENTS

06 :	4,973										

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